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(54) **Title:** KAVA PRODUCT MADE FROM NOBLE KAVA AND PROCESS OF MAKING THE SAME

(57) **Abstract:** Embodiments relate to a concentrate and a product comprising a Kavalactone extract comprising Kavalactones comprising two or more of Kavain, Dihydrokavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin, wherein the Kavalactone extract is an extract of a Noble Kava, wherein the product comprises a beverage, an aerated beverage, a candy, a hard and chewable gummy candy, a confectionary, an effervescent powder or tablet, or a dietary supplement. Embodiments relate to human edible or drinkable product comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted from a Noble Kava plant that is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption. Embodiments relate to methods of making a concentrate comprising a Kavalactone extract, wherein the method comprises extracting the Kavalactone extract from a Noble Kava and concentrating the Kavalactone extract to form the concentrate.

KAVA PRODUCT MADE FROM NOBLE KAVA AND PROCESS OF MAKING THE SAME

RELATED APPLICATIONS

[0001] The present application claims priority to U.S. Provisional Patent Application 62/890,057 entitled "KAVA PRODUCT MADE FROM NOBLE KAVA AND PROCESS OF MAKING THE SAME" filed on August 21, 2019. The present application is related to U.S. Patent Application Nos. 15/899,383 and 15/899,385, both entitled "Enhanced Noble Kava Extract, Method of Making the Same, and Compositions Thereof" and both filed on February 20, 2018, and U.S. Patent Application No.: 16/020,875 entitled "Concentrate and Products Containing Noble Kava, and Methods of Making the Same," filed June 27, 2018, and the disclosures of the above-mentioned three applications are herein incorporated by reference in their entirety. This application is related to U.S. Patent Application No. 16/271,848, entitled "PROCESSING AND PRESERVING A KAVA PRODUCT AND PROCESS OF MAKING IT STABLE" and filed on February 10, 2019, and the disclosure of the above-mentioned application is herein incorporated by reference in their entirety. This application is related to PCT Patent Application No. PCT/US2019/018451, entitled "ENHANCED KAVA EXTRACT, METHOD OF MAKING THE SAME, AND COMPOSITIONS THEREOF" and both filed on 19 February 2019, and the disclosure of the above-mentioned application is herein incorporated by reference in their entirety.

FIELD OF INVENTION

[0002] This invention relates to a Noble Kava product made from a Noble Kava plant and process of making the same. Noble Kava is unique in terms of its properties as compared to a non-Noble Kava. The Noble Kava products made by extraction from Noble Kava according to the

embodiments herein are safe, novel and unique as compared to non-Noble Kava products made by extraction from a non-Noble Kava.

BACKGROUND

[0003] Noble Kava (*Piper methysticum*) is a tropical shrub and belongs to the family Piperaceae that grows commonly throughout the islands of South Pacific. This shrub is also grown in countries including Fiji, Vanuatu, USA, Samoa and Tonga. It is also referred to as intoxicating pepper. Noble Kava and its products have been used in traditional medicine and for cultural purposes across Oceania for possibly as long as 30 centuries.

[0004] United States Patent No. 5770207 A discloses a dietary supplement having Noble Kava root extract and at least one additional relaxing herb selected from the group consisting of Passion Flower, Chamomile Flowers, Hops, and Schizandra Fruit.

[0005] United States Patent No. 5976550 A discloses a composition of matter to achieve a fat reducing effect comprising: a sugar based confectionary to be eaten before a meal to minimize the appetite, a therapeutic amount of chitosan mixed in the confectionary together with a therapeutic amount of Noble Kava whereby the chitosan functions to attract fat to form a non-digestible amalgam of chitosan and fat that passes out of the body and whereby the Noble Kava functions to reduce a desire to eat by mildly anesthetizing the mouth.

[0006] United States Patent No. 9636373 B1 discloses to a Noble Kava-based beverage composition. In one embodiment, a beverage composition includes water; Noble Kava extracts, milk thistle extract and yerba mate extract.

[0007] United States Patent No. 8383169 B1 discloses a composition comprises Noble Kava root extract and at least one additional component of lemon balm or chamomile extract to serves as a

relaxant and mind energizer that affords the benefit of reduction in the incidence or severity of stomach upset and/or hangover.

[0008] United States Patent No. 4921717 discloses a process of ultra-high temperature (UHT) process for making a sterilized milk product. This method involves a process in which milk or a milk product is partially concentrated, sterilized by UHT treatment and further concentrated to provide a sterile, concentrated material for aseptic packaging.

[0009] United States Patent No. 3364038 discloses a process and apparatus for pasteurizing and clarifying, separating and homogenizing milk. The disclosure includes flexibility of processing control and product delivery and technique employed is compatible with standard high-temperature, short-time pasteurizing systems and increase in shelf-life for processed milk or cream.

[0010] United States Publication No. US 20080050507 A1 discloses a process for high-pressure processing (HPP) of foods for effective reduction of microbes such as E. Coli, listeria and salmonella. This HPP technique also referred to as pascalization or bridgmanization or high hydrostatic pressure (HHP) which uses isostatic pressure to evenly apply great pressures to food on all sides of the foods. The high-pressure intensely diminishes pathogens in the food so processed, as much as a four or five-log reduction in counts of colony forming units (CFU). This technique of usage of pressure is possible in a normal environment for varied products. In this method, food does not undergo deformation and a combination of food such as beef jerky or sausage with cheese to produce a product which is expected to have a long shelf life.

[0011] All the methods described above involve exclusive treating of animal products and not the plant products. This is because of difference in properties of animal and plant products. Noble Kava juice and Noble Kava products are prepared from the roots, rhizomes and stems of the Noble Kava plant. The persistent color in Noble Kava juice and Noble Kava products is an indication of

its texture, flavor, aroma and high quality. The precipitation of pectins leads to muddiness or turbid formation is accountable for the properties of the Noble Kava juice and other Noble Kava products. Kavalactones are measured to be the key ingredients of Noble Kava juices and other Noble Kava products and responsible for the pharmacological activity in humans such as anti-inflammatory, anxiolytic, sedative and analgesic effects.

[0012] Kava root (*Piper methysticum*) contains several active constituents known as "Kavalactones" that have been shown to have anxiolytic properties via modulation of gamma-aminobutyric acid (GABA) receptors and other excitatory neurotransmitters, as well as inhibition of monoamine oxidase B and inflammation.

[0013] "Composition and biological activity of traditional and commercial kava extracts" by Cynthia S. Côté, Christine Kor, Jon Cohen, Karine Auclair, Biochemical and Biophysical Research Communications 322 (2004) 147–152, (hereinafter "Côté") states: "Sixteen different Kavalactones have been identified as the active principles of this extract. Methysticin, dihydromethysticin, kavain, dihydro-kavain, demethoxyyangonin, and yangonin are the major ones and account for 96% of the organic extract." The phrase "96% of the organic extract" refers to 96% of the total Kavalactones in a typical kava extract from a component of kava plant such as kava root and stems.

[0014] Côté discloses Kavalactone extracts using water, acetone, ethanol and methanol in Figures 2(A), 2(B) and 2(C) of Côté. The amounts and concentration of the major Kavalactone extracted using water, acetone, ethanol and methanol according to Côté are reproduced below in Tables 1a to 1d.

Table 1a: Concentration and percentage of major Kavalactones extracted from kava root using **water** as the extraction solvent.

Type of Major Kavalactone	**Concentration (µg Kavalactone / mg kava root)**	**Wt.% of Extracted Major Kavalactones**
Methysticin (M)	1	6.3 %
Dihydromethysticin (DHM)	2	12.5 %
Kavain (K)	5.5	34.38 %
Dihydrokavain (DHK)	6,5	40.63 %
Demethoxyyangonin (DMY)	0.8	5 %
Yangonin (Y)	0.2	1.25 %
Total of Major Kavalactones	**16**	**100%***
M + DHM	3	18.8 %
K + DHK	12	75 %
Y + DMY	1	6.3 %

* Methysticin, dihydromethysticin, kavain, dihydro-kavain, demethoxyyangonin, and yangonin are the major ones and account for 96% of the organic extract.

Table 1b: Concentration and percentage of major Kavalactones extracted from kava root using **acetone** as the extraction solvent.

Type of Major Kavalactone	**Concentration (µg Kavalactone / mg kava root)**	**Wt.% of Extracted Major Kavalactones**
Methysticin (M)	8	14.18 %
Dihydromethysticin (DHM)	9	15.96 %
Kavain (K)	12.2	21.63 %
Dihydrokavain (DHK)	10.8	19.15 %
Demethoxyyangonin (DMY)	4.4	7.8 %
Yangonin (Y)	12	21.28
Total of Major Kavalactones	**56.4**	**100 %***
M + DHM	17	30.1 %
K + DHK	23	40.78 %
Y + DMY	16.4	29.1 %

* Methysticin, dihydromethysticin, kavain, dihydro-kavain, demethoxyyangonin, and yangonin are the major ones and account for 96% of the organic extract.

Table 1c: Concentration and percentage of major Kavalactones extracted from kava root using **ethanol** as the extraction solvent.

Type of Major Kavalactone	**Concentration (µg Kavalactone / mg kava root)**	**Wt.% of Extracted Major Kavalactones**
Methysticin (M)	8	13.99 %
Dihydromethysticin (DHM)	9	15.74 %
Kavain (K)	12.6	22.23 %
Dihydrokavain (DHK)	11	19.23 %
Demethoxyyangonin (DMY)	4.6	8.04 %
Yangonin (Y)	12	20.98 %
Total of Major Kavalactones	**57.2**	**100 %***
M + DHM	17	29.7 %
K + DHK	23.6	41.26 %
Y + DMY	16.6	29 %

* Methysticin, dihydromethysticin, kavain, dihydro-kavain, demethoxyyangonin, and yangonin are the major ones and account for 96% of the organic extract.

Table 1d: Concentration and percentage of major Kavalactones extracted from kava root using **methanol** as the extraction solvent.

Type of Major Kavalactone	**Concentration (µg Kavalactone / mg kava root)**	**Wt.% of Extracted Major Kavalactones**
Methysticin (M)	6	13.16 %
Dihydromethysticin (DHM)	7.4	16.29 %
Kavain (K)	10.8	23.68 %
Dihydrokavain (DHK)	9	19.74 %
Demethoxyyangonin (DMY)	3.8	8.33 %
Yangonin (Y)	8.6	18.86 %
Total of Major Kavalactones	**45.6**	**100%***
M + DHM	13.4	29.3 %
K + DHK	19.8	43.42 %
Y + DMY	12.4	27.2 %

* Methysticin, dihydromethysticin, kavain, dihydro-kavain, demethoxyyangonin, and yangonin are the major ones and account for 96% of the organic extract.

[0015] The concentration (µg Kavalactone / mg kava root) of the major Kavalactones according to Côté using water, acetone, ethanol and methanol, respectively, are 16, 56.4, 57.2, and 45.6. The yields or extraction yield of the major Kavalactones according to Côté using water, acetone, ethanol and methanol, respectively, are 1.6%, 5.64%, 5.72%, and 4.56%.

[0016] The term “yield” or “extraction yield” is defined as the amount in percentage of the six major Kavalactones in the enhanced Noble Kava extract per unit weight of the Noble Kava plant part from which the Noble Kava extract is extracted.

[0017] The standard of quality can be measured by the presence of total number of Kavalactones in Noble Kava juice and other Noble Kava products. A qualitative form called chemotype which is commonly stated by the comparative concentration of each of the 6 major Kavalactones in samples signifying a chemical profile of Noble Kava juices and other Noble Kava products.

[0018] The term "pharmacological activity" of Kavalactones refers to the agonist response (I) due to the anxiolytic properties via modulation of gamma-aminobutyric acid (GABA) receptors and other excitatory neurotransmitters, as well as inhibition of monoamine oxidase B and inflammation.

[0019] The method of determining pharmacological activity of Kavalactones is described in "Kavain, the Major Constituent of the Anxiolytic Kava Extract, Potentiates GABAA Receptors: Functional Characteristics and Molecular Mechanism," Han Chow Chua, Emilie T. H. Christensen, Kirsten Hoestgaard-Jensen, Leonny Y. Hartiadi, Iqbal Ramzan, Anders A. Jensen, Nathan L. Absalom, Mary Chebib, PLoS One. 2016; 11(6): e0157700. Published online 2016 Jun 22. doi: 10.1371/journal.pone.0157700, PMCID: PMC4917254. The relevant description is reproduced below:

[0020] "Prism (version 5.04; GraphPad Software, La Jolla, CA, USA) was used for data analysis. All data are presented as mean ± standard error of the means (SEM). Raw data from GABA concentration-response experiments were fitted to a monophasic Hill equation [Eq. 1], and the fitted maximal values were used for normalisation of each dataset. In this equation, I_{max} represents the maximal agonist response, [A] represents the agonist concentration, EC_{50} represents the agonist concentration required to activate 50% of the maximal response, n_H represents the Hill slope of the fitted curve.

$$I = \frac{I_{max}}{1 + 10^{((\log EC_{50} - [A])n_H)}} \quad (1)$$

[0021] To illustrate the modulatory effect of a chemical of interest, the data were normalised and expressed as shown in Eq 2, where I represents the current responses elicited by the co-application of GABA and modulator, I_{GABA} represents the amplitude of the control GABA-elicited responses. Alternatively, the modulatory effect was expressed as the fold of potentiation, as shown in Eq 3.

$$\frac{I - I_{GABA}}{I_{GABA}} \quad (2)$$

$$\frac{I}{I_{GABA}} \quad (3)$$

[0022] When comparing parameters across different groups (receptors subtypes/wild type vs. mutant), the means of the values obtained from individual dataset were analysed using either unpaired Student's t test (comparing means for two groups) or one-way ANOVA with Tukey's post hoc test (comparing every mean with every other mean in three or more groups). When comparing the effect before and after the addition of a drug, paired Student's t test was used. Statistical significance was attained at $p < 0.05$."

[0023] The technique of pasteurization is utilized for killing pathogens and spoilage of microbes in dairy products such as milk. This procedure can also be implemented for destroying microbes

in fruit juices and plant products. The complex and sensitive nature of Kavalactones is a great concern when pasteurizing Noble Kava juices and other Noble Kava products so that the properties such as psychoactive features and taste of Noble Kava juices and other Noble Kava products are unaltered. This is because of the fact that pasteurizing procedure may terminate the physiochemical, organoleptic and nutritional features of Noble Kava juices and other Noble Kava products. The Noble Kava juices and other Noble Kava products are made of highly temperature sensitive Kavalactones and starch components and pasteurization of Noble Kava juices and other Noble Kava products may lead to degradation at temperatures above 60°C. On the other hand, natural, traditional and unpasteurized Noble Kava juices and other Noble Kava products approximately possesses a shelf life period of less than three days under refrigeration at 4°C, which is commercially unacceptable. The embodiments relate to a combinatorial method for processing and preserving Noble Kava product and process of making it stable and commercially acceptable.

[0024] The quality of Noble Kava extracts currently available in the United States is highly questionable as the Noble Kava extracts are made from non-Noble Kava. These extracts are, as determined by HPLC tests using USP validated methods, frequently of significantly less strength than claimed and often of chemotypes inconsistent with known Noble Kava cultivars. The parent non-Noble Kava materials are of inferior quality, often containing components of the non-Noble Kava plant which are unlawful for consumption (stems, leaves), as well as fillers such as rice flour.

[0025] In addition, the prevalence of non-Noble Kava cultivars such as “Tudei” cultivars have always been mixed in with “Noble” cultivars due to abundance of Tudei cultivars, the lack of domestic demand for these plants, and consequently the much lower price point of this material. Flavokavain B (FBK) is a chemical in the Noble Kava plant that is found in higher concentrations in the non-Noble Kava versus the Noble Kava.

[0026] US Patent No. 7,105,185B2 of Gow et al. relates to a method of producing a processed kava product involves using an extraction solvent, such as liquid CO_2, to preferentially extract different Kavalactones from the source material at different rates. US Patent No. 7,105,185B2 discloses "Combined weight percentage of flavokavain A and flavokavain B ranges from a minimum of about 0.3% to a maximum of about 3%."

[0027] **SUMMARY OF THE INVENTION**

[0028] The term "%" throughout the application means a weight percent of a component of a product as a percentage of the total weight of the product (i.e., wt.%) unless stated otherwise or if the%is not related to an amount of a component of a product.

[0029] The present invention discloses a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract.

[0030] The present invention also discloses the process to prepare the composition is also disclosed according to present invention.

[0031] The disclosed composition of the present invention comprises an enhanced Noble Kava extract which is derived from Noble Kava plants and the enhanced Noble Kava extract produces a state of calmness, relaxation and well-being without diminishing cognitive performance or negative side effects.

[0032] Owing to their ability to provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation, the Cannabis containing compositions of the embodiments herein are used for both medical use and recreational use. Cannabis containing compositions are used to treat chronic pain and muscle spasm for medical use but have common side effects include

but not limited to dizziness, feeling tired, vomiting, anxiety, agitated restlessness and hallucinations.

[0033] In one embodiment, the disclosed composition according of the present invention comprises an enhanced Noble Kava extract that diminishes, suppresses or relieves the common negative side effects cannabis or hemp extract or cannabis containing compositions by serving as a relaxant, providing relief from anxiety, providing calming benefits, producing a state of calmness, relaxation and well-being without diminishing cognitive performance.

[0034] In one embodiment, Kavalactones in the enhanced Noble Kava extract are main source or the principal ingredients for serving as a relaxant, providing relief from anxiety, providing calming benefits, relief from nausea producing a state of calmness, relaxation and well-being without diminishing cognitive performance. There are different types of Kavalactones present in the Noble Kava plant and six of these Kavalactones make up greater than 95% of the total Kavalactones pharmacological activity.

[0035] In one embodiment, the quality of the enhanced Noble Kava extract is related to the higher amounts of Kavalactone content, higher concentration of Kavalactone content, favorable compositional mix of Kavalactone. In another embodiment, the quality of the enhanced Noble Kava extract is related to the higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0036] An embodiment relates to a composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a material comprising CO_2 and/or ethanol extraction method from a selected part of a Noble Kava plant and containing 10% or more of a Kavalactone as measured by HPLC, wherein the Noble

Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption.

[0037] Preferably, the selected part of the Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

[0038] Preferably, the material comprises supercritical CO_2.

[0039] Preferably, the material comprises supercritical CO_2 and ethanol.

[0040] In another embodiment, the material comprises supercritical CO_2 or ethanol.

[0041] Preferably, the enhanced Noble Kava extract contains 60% or more of the Kavalactone as measured by HPLC.

[0042] In another embodiment, the enhanced Noble Kava extract extracted using a material comprising ethanol extraction method contains 50% or more of the Kavalactone as measured by HPLC.

[0043] Preferably, the composition further comprises an additive comprising a tetrahydrocannabinol extract, a cannabidiol extract, a hemp extract or combinations thereof. These extracts could be made by a variety of methods, including using extraction using ethanol, CO2, H2O, BHO, RSO, and rosin as a solvent.

[0044] BHO is a waxy concentrated cannabis extract made by pushing liquid butane (which liquefies easily) through a tube packed with frosty buds. The resulting solution is a mix of concrete oils, waxes, cannabinoids, terpenoids, and sometimes chlorophyll. Butane is a nonpolar chemical solvent made from petroleum and natural gas.

[0045] RSO is Rick Simpson Oil; it is a full extract cannabis oil meant to be taken orally or applied topically. RSO is a marijuana extract made utilizing a solvent to extract cannabinoids. The most common solvent used to produce RSO is grain alcohol, but some other solvents like ethanol or butane are sometimes used. Flower (bud) material is placed in a large container and alcohol is

added. The entire mixture is stirred and crushed into the alcohol. After a time, the alcohol is drained from the remaining plant material. That mixture is then heated in a container, such as a rice cooker, so that the residual alcohol evaporates. The end product is a high potency oil often dark in color with a thick consistency. RSO can be siphoned into a syringe style applicator for dosing which offers the advantage of a long shelf life as oxidation does not easily occur.

[0046] Preferably, the additive consists essentially of the tetrahydrocannabinol extract.

[0047] Preferably, the additive consists essentially of the cannabidiol extract.

[0048] Preferably, the additive consists essentially of the hemp extract.

[0049] Preferably, the composition provides a benefit of reduction in an incidence or severity of anxious feelings or panic sometimes associated with the tetrahydrocannabinol.

[0050] Preferably, the composition is selected from the group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and combinations thereof.

[0051] Preferably, hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a tetrahydrocannabinol extract in the total candy.

[0052] Preferably, hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a cannabidiol extract in the total candy.

[0053] Preferably, the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a hemp extract in the total candy.

[0054] An embodiment relates to a composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a non-organic solvent from a selected part of a Noble Kava plant and containing 10% or more of a

Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption; wherein the non-organic solvent comprises supercritical CO_2.

[0055] Another embodiment relates to a method of making a composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a material comprising CO2and/or ethanol extraction method from a selected part of a Noble Kava plant and containing 10% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption, the method comprising exposing the selected part of the Noble Kava plant to the material and extracting the Noble Kava product.

[0056] The method could further comprise post extraction recovery and/or concentration of the Noble Kava product.

[0057] Preferably, the selected part of a Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

[0058] Preferably, material consists essentially of liquid supercritical CO_2.

[0059] Preferably, the material consists essentially of ethanol.

[0060] Preferably, the enhanced Noble Kava extract contains 70% or more of the Kavalactone as measured by HPLC.

[0061] Preferably, the enhanced Noble Kava extract contains 80% or more of the Kavalactone as measured by HPLC.

[0062] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for having higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for having higher amounts of six major

Kavalactone content, higher concentration of six major Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0063] In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the six major Kavalactones with higher pharmacological activity.

[0064] In one embodiment, the ability to produce a state of calmness, relaxation and well-being, the ability to serve as a relaxant. provide relief from anxiety, provide relief from nausea, provide calming benefits are dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract, the amounts of six major Kavalactones in the enhanced Noble Kava extract and favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to produce a state of calmness, relaxation and well-being, the ability to serve as a relaxant. provide relief from anxiety, provide relief from nausea, provide calming benefits are dependent on the compositions of the enhanced Noble Kava extract which comprises higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0065] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In

another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity.

[0066] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract.

[0067] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract serving as a relaxant.

[0068] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing calming benefits.

[0069] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder

or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing relief from anxiety.

[0070] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract producing a state of calmness, relaxation and well-being.

[0071] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing relief from nausea.

[0072] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as poppy.

[0073] Cannabis plants produce a group of chemicals called cannabinoids, which produce mental and physical effects when consumed. Cannabis plants produce a group of chemicals that can be considered to be psychoactive components. In other words, cannabinoids can produce mental and physical effects when consumed. Both tetrahydrocannabinol (THC) and cannabidiol (CBD are cannabinoids. Owing to its ability to provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation, the tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions of the embodiments herein could be used for both

medical use and recreational use; they could be used to treat chronic pain and muscle spasm for medical use.

[0074] However, tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions also produce common side effects include dizziness, feeling tired, vomiting, anxiety, agitated, restlessness and hallucinations. These side effects are undesirable and uncomfortable for person consuming tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions.

[0075] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC).

[0076] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component serving as a relaxant, providing calming benefits, providing relief from anxiety, producing a state of calmness, relaxation and well-being and provide relief from nausea.

[0077] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD).

[0078] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis

comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component serving as a relaxant, providing calming benefits, providing relief from anxiety, producing a state of calmness, relaxation and well-being and provide relief from nausea.

[0079] In another embodiment, formulation for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement containing enhanced Noble Kava extract and at least one cannabis containing component. The composition will also optionally contain one or more from the list including but not limited to different types of sugar, sugar substitute, sugar free substitute, corn syrup, lime, lemon, citrus fruits, citrus fruit juices high fructose corn syrup, rice syrup, gelatin, malt, sodium salt, potassium salt, food color, food flavor, natural flavors, preservatives, extracts and slices from nuts such as almond, hazelnut, cashew nuts and pistachios.

[0080] In one embodiment, the invention provides a process for preparing the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis component. The beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis component are made by following some of the steps from the list of possible processing steps. The process comprises a list of processing steps as described below:

[0081] Noble Kava roots are obtained and ground;

[0082] extraction of the Noble Kava roots or other part of the plant to obtain enhanced Noble Kava extract using liquid extraction media (alcohols, mixtures of alcohols, supercritical CO_2(sCO_2), or mixtures of alcohols and sCO_2) and an extraction process (distillation, leaching, etc.);

[0083] post extraction recovery and/or concentration of the enhanced Noble Kava extract following extraction of the Noble Kava roots or other part of the plant;

[0084] filtering the post extraction recovery and/or concentration product that has undergone extraction to remove particulates, solids, components of soil and / or inorganic components of soil;

[0085] optionally, selectively removing the moisture or selectively drying the filtered post extraction recovered;

[0086] optionally, selectively drying the product that has undergone extraction and filtering leading to the formation of powder, paste and liquid forms of enhanced Noble Kava extract;

[0087] optionally, mixing the enhanced Noble Kava extract with at least one cannabis component and optionally with other ingredients such as milk thistle, Magnesium, Theanine vitamins, sugars, flavors and colors to make a first liquid mixture and then adding juice and / or juice concentrate to the first liquid mixture to make a second liquid mixture and mix thoroughly;

[0088] optionally, first mixing the enhanced Noble Kava extract and / or the supplement liquid mix containing enhanced Noble Kava extract and poppy and optionally lemon, adding the supplement dry mix optionally containing Theanine and Vitamin B and mixing until all the components are dispersed; adding the juice, juice concentrate to the dispersed mix and thoroughly mixing all the components using continuous mixing process;

[0089] optionally, for beverage fill bottles while continuously mixing thoroughly;

[0090] optionally, for candies, hard and chewable gummy candies and confectionaries, converts the liquid mixtures into different end products by removing the moisture or drying the mixture.

[0091] In one embodiment, the Noble Kava plants are extracted from the Noble Kava roots or other part of the plants using an extraction process and extraction medium. In another embodiment, enhanced Noble Kava extract from the Noble Kava roots or other parts of the plant is obtained by a variety of extraction processes using variety of extraction media or solvents that increase the

amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provided a favorable mix of the six major Kavalactones in the enhanced Noble Kava extract. In one embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having higher amounts of Kavalactone content and / or higher concentration of Kavalactone content and / or favorable compositional mix of six major Kavalactones. The extraction process removes the impurities such as dirt, components of soil, inorganic components of soil, low molecular weight components, other minor constituents and at least some of the non-major six Kavalactones that do not belong to the six major Kavalactones.

[0092] In one embodiment, the extraction process consists or contains a combination of one extraction steps and one extracting media. In another embodiment, the extraction process consists or contains a combination of at least one extraction steps and at least one extracting media. In another embodiment, the extraction process consists or contains a combination of multiple extraction steps and multiple extracting media. In another embodiment, the extraction process consists or contains a combination of multiple extraction steps, multiple extracting media including but not limited to glycerin, glycerin -water, alcohol, alcohol-water mixture, and alcohol - glycerin mixture, acetate and mixtures thereof.

[0093] In one embodiment, the extraction process comprises an extracting media including but not limited to alcohols, mixtures of alcohols, mixture of alcohols and water, mixture of alcohols and glycerin acetone or combinations thereof. In another embodiment. In one embodiment, the extraction process comprises an extracting media including but not limited to alcohols such as ethyl alcohol, methyl alcohol, propyl alcohol, isopropyl alcohol, butyl alcohol. In another

embodiment, the extraction process comprises an extracting media comprises glycerin or glycerin-water.

[0094] In one embodiment, the extraction media can be supercritical CO_2 (carbon dioxide). The efficacy of supercritical carbon dioxide will depend on the selected pressure, temperature and period of time which are used for the supercritical carbon dioxide to mix with the Noble Kava in a sealed mixing vessel to dissolve the species targeted for removal. In an embodiment, the noble kava charge is shredded noble kava roots used for extraction of kava extract.

[0095] In another embodiment, the extraction process consists of multiple extraction steps and multiple extracting media including supercritical CO_2 and one or multiple extracting media selected from the list that includes but not limited to alcohol, glycerin, alcohol-water mixture, glycerin-water mixture, and alcohol - glycerin mixture. In another embodiment, the extraction process comprises a combination of multiple extraction steps, multiple extracting media including supercritical CO_2, water, ethanol and ethanolic mixture. In one embodiment, the extraction process consists of first extraction step using ethanol or ethyl alcohol and a second extraction step using supercritical CO_2. In another embodiment, the extraction process consists of multiple extraction steps using ethanol or ethyl alcohol and multiple extraction step using supercritical CO_2. In another embodiment, the extraction process consists of one or multiple extraction steps using ethanol or ethyl alcohol and one or multiple extraction steps using supercritical CO_2.

[0096] In one embodiment, enhanced Noble Kava extracts and at least one cannabis component and other ingredients such as juice, and / or juice concentrate, optionally milk thistle, Magnesium, vitamins, sugars, flavors and colors are mixed in a mixing vessel at about ambient temperature, mixing speed that mixes thoroughly and mixing time of at least 1 minute. In another embodiment, the enhanced Noble Kava extract and the supplement dry mix optionally containing Theanine and Vitamin B and supplement liquid mix containing enhanced Noble Kava extract and poppy and

optionally lemon are mixed first and then the juice concentrate and the flavored juice concentrate are added, and all the ingredients are mixed at ambient temperature. Depending on the form of the end product as chewable gummy candies, beverages, associated confectionaries, and effervescent powder or tablet and dietary supplement, a final step converts the liquid mixtures into different end products or leaves it in liquid form.

[0097] The present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract and / or poppy with enhanced Noble Kava extract producing a state of calmness, relaxation, providing calming benefits, serving as a relaxant, providing relief from anxiety providing relief from nausea

[0098] wherein the enhanced Noble Kava extract was obtained from roots, rhizomes and/or lower part of the basal stem of the Noble Kava plant using an extraction process

[0099] wherein the extraction process consists of one or multiple extraction steps using ethanol or ethyl alcohol and one or multiple extraction steps using supercritical CO2to produce an enhanced Noble Kava extract

[0100] wherein the enhanced Noble Kava extract consists of at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity.

[0101] An embodiment relates to a method comprising heating a Noble Kava product, pressurizing the Noble Kava product, electrically pulsing the Noble Kava product or combinations thereof; homogenizing the Noble Kava product; cooling the Noble Kava product; and packaging of the Noble Kava product; wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition.

[0102] Another embodiment related to further adding a processing aid to the Noble Kava product at any stage of the method.

[0103] In one embodiment, the processing aid comprises a substance used in a production of a processed food.

[0104] In one embodiment, the processing aid comprises an enzyme.

[0105] In one embodiment, the Noble Kava product comprises one or more of: a Noble Kava juice or a Noble Kava root water extract; a raw Noble Kava product frozen; a raw Noble Kava product at room temperature; a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement; wherein the Noble Kava product contains two or more of Kavain (K), methysticin (M), demethoxyyangonin (DMY), yangonin (Y), dihydrokavain (DHK) and dihydromethysticin (DHM).

[0106] In one embodiment, the heating of the Noble Kava product comprises exposing the Noble Kava product to a pasteurization temperature of 65°C or more.

[0107] In one embodiment, the pressurizing the Noble Kava product comprises exposing the Noble Kava product to a pressure of about 200 MPa to about 1000 MPa.

[0108] In one embodiment, the electrically pulsing the Noble Kava product comprises exposing the Noble Kava product to a pulsed electrical field comprising positive and negative pulses.

[0109] In one embodiment, the homogenizing the Noble Kava product comprises homogenizing the Noble Kava product.

[0110] In one embodiment, the cooling the Noble Kava product comprises causing the Noble Kava product to cool after the heating and the pressurizing of the Noble Kava product.

[0111] In one embodiment, the packaging the Noble Kava product comprises an aseptic packaging.

[0112] Another embodiment relates to a method comprising heating a Noble Kava product to a pasteurization or sterilization temperature; homogenizing the Noble Kava product; cooling the Noble Kava product; and packaging the Noble Kava product; wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition and prepare a shelf-stable Noble Kava product; wherein the Noble Kava product comprises:

[0113] a Noble Kava juice or a Noble Kava root water extract;

[0114] a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;

[0115] wherein the Noble Kava product contains two or more of Kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

[0116] In one embodiment, the heating the Noble Kava product to the pasteurization temperature comprises exposing the Noble Kava product to a temperature of 65°C or more for a period of 0.1 second or more.

[0117] In one embodiment, treatment of the Noble Kava product to achieve shelf stability comprises exposing the Noble Kava product to ionizing radiation.

[0118] In one embodiment, the packaging the Noble Kava product comprises aseptic packaging of the Noble Kava product.

[0119] Another embodiment relates to a method comprising heating a Noble Kava product; drying the Noble Kava product; pressurizing the Noble Kava product to a specific pressure optionally with heating; homogenizing the Noble Kava product optionally with heating; cooling the Noble Kava product; and packaging the Noble Kava product; wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition and prepare a shelf-stable Noble Kava product; wherein the Noble Kava product comprises:

[0120] a Noble Kava juice or a Noble Kava root water extract;

[0121] a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;

[0122] wherein the Noble Kava product contains two or more of Kavain, methysticin, demethoxyyangonin , yangonin, Dihydrokavain and dihydromethysticin.

[0123] In one embodiment, the pressurizing the Noble Kava product comprises exposing the Noble Kava product to a pressure of 200 MPa or more.

[0124] In one embodiment, the cooling the Noble Kava product comprises exposing the Noble Kava product to a flash cooling.

[0125] In one embodiment, a composition comprising a kava particulate suspended in a liquid mixture comprising ethanol, water and glycerin, wherein the kava particulate has a particle size ranging from 0.020 to 2000.0 μm. In one embodiment, the liquid mixture is a homogenous mixture. In one embodiment, the particle size of about 1 μm to about 1000 μm. In one embodiment, the mixture is alcohol-free, non-alcoholic and/or an aqueous solution.

[0126] The kava particle comprises two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

[0127] In one embodiment, the composition is mixed with a THC extract and/or a CBD extract.

[0128] In one embodiment, the composition has an aerobic mesophilic plate count of about 8000 cfu/g.

[0129] In one embodiment, the composition has a yeast count less than <10 cfu/g.

[0130] In one embodiment, the composition has a mold count is found to be <10 cfu/g.

[0131] In one embodiment, the composition is in form of a gel; wherein viscosity of the gel decreases at a temperature higher than about 69°C.

[0132] An embodiment relates to a method comprising:

a. treating a Noble Kava product;

b. optionally homogenizing the Noble Kava product; and

c. optionally cooling the Noble Kava product;

d. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition or reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature.

[0133] In one embodiment, the treatment of the noble kava product comprises at least one of pressurizing the Noble Kava product, electrically pulsing the Noble Kava product, heating a Noble Kava product to a pasteurization or sterilization temperature, exposing the Noble Kava product to ionizing radiation or combination thereof.

[0134] In one embodiment, packaging of the Noble Kava product, wherein the packaging the Noble Kava product comprises an aseptic packaging.

[0135] In one embodiment, the pressurizing the Noble Kava product comprises exposing the kava product to a pressure of about 200 MPa or higher.

[0136] In one embodiment, the electrically pulsing the Novel Kava product comprises exposing the Noble Kava product to a pulsed electrical field comprising positive and negative pulses.

[0137] In one embodiment, exposing the Noble Kava product to ionizing radiation.

[0138] In one embodiment, the heating the Noble Kava product to a pasteurization temperature comprises exposing the kava product to a temperature of 65°C or more for a period of 0.1 second or more.

[0139] In one embodiment, the cooling the Noble Kava product comprises exposing the Noble Kava product to a flash cooling.

In one embodiment, the Noble Kava product comprises:

a. a Noble Kava juice or a Noble Kava root water extract;

b. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;

c. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

[0140] An embodiment relates to a noble kava product comprising: a enhanced kava extract, a THC and/or a CBD, wherein the enhanced kava extract is form of particles size, wherein the particle is ranging from 0.020 to 2000.0 μm.

[0141] An embodiment relates to a composition comprising a theanine, a vitamin and an enhanced kava extract of a noble kava, wherein the enhanced kava extract is extracted from a selected part of a kava plant, and wherein the enhanced kava extract contains 50% or more of a pharmacological active kavalactones as measured by HPLC, wherein the kava plant is not a wild type kava such that the enhanced kava extract is safe for human consumption; wherein the enhanced kava extract comprises six major kavalactones that make up greater than 95% of the pharmacological active kavalactones, the six major kavalactones are kavain, dihydrokavain, methysticin, dihydrom-ethysticin, yangonin, and demethoxyyangonin;

[0142] In an embodiment, the noble kava means that the kava plant has a history of safe use and provides an user with an experience of calmness, relaxation and well-being without diminishing cognitive performance or causing other negative side-effects; and wherein the noble kava is sourced from: (1) Federated States of Micronesia, (2) Fiji, (3) Hawaii, (4) Papua New Guinea, (5) Samoa, (6) Solomon Islands, (7) Tonga and/or (8) Vanuatu.

[0143] In one embodiment, the selected part of the kava plant comprises a lower part of basal stems, rhizomes and/or roots.

[0144] In one embodiment, the enhanced kava extract is extracted using a material comprising supercritical CO2 and/or ethanol.

[0145] In one embodiment, the enhanced kava extract contains 60% or more of the pharmacological active kavalactones as measured by HPLC.

[0146] In one embodiment, the composition comprising enhanced kava extract, further comprising a cannabinoid.

[0147] The composition is obtained by a method comprising exposing the selected part of the kava plant to a material comprising CO2 and/or ethanol, extracting the enhanced kava extract containing 50% or more of a kavalactone as measured by HPLC, and mixing the enhanced kava extract with theanine. the method further comprising post extraction recovery and/or concentration of the enhanced kava extract.

[0148] In one embodiment, the enhanced kava extract contains 70% or more of the kavalactone as measured by HPLC. In one embodiment, the enhanced kava extract contains 80% or more of the kavalactone as measured by HPLC.

[0149] In one embodiment, further comprising a poppy.

[0150] In one embodiment, the composition comprising enhanced kava extract further comprising a cannabinoid and a poppy.

[0151] An embodiment relates to a human edible or drinkable product comprising an enhanced kava extract obtained from a selected part of a kava plant; wherein A1, A2 and A3, respectively, are amounts of major kavalactones, non-major kavalactones and total kavalactones in the selected part; wherein A4, A5 and A6, respectively, are amounts of the major kavalactones, the non-major kavalactones and the total kavalactones in the enhanced kava extract: wherein R1 = A1/A3; wherein R2 = A2/A3; wherein R3 = A4/A6; wherein R4 = A5/A6; wherein R3 > R1; wherein R4 < R2; wherein the major kavalactones consists of kavain, dihydrokavain, methysticin,

dihydromethysticin, yangonin and demethoxyyangonin; wherein the non-major kavalactones are kavalactones other than the major kavalactones; wherein the enhanced kava extract is extracted from the selected part using a material; wherein the kava plant is not a wild type kava such that the kava human edible or drinkable product is safe for human consumption, wherein the human edible or drinkable product further comprises a tetrahydrocannabinol extract, wherein a ratio of the enhanced kava extract to the tetrahydrocannabinol extract is such that the human edible or drinkable product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the human edible or drinkable product.

[0152] In one embodiment, the human edible or drinkable product is selected from a group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and a combination thereof.

[0153] In one embodiment, the human edible or drinkable product of claim 149, further comprising a cannabidiol extract, wherein a ratio of the enhanced kava extract to the cannabidiol extract is 5 mg to 950 mg of the enhanced kava extract and 1 mg to 900 mg of the cannabidiol extract.

[0154] In one embodiment, the human edible or drinkable product the ratio of the enhanced kava extract to the tetrahydrocannabinol extract is 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the tetrahydrocannabinol extract.

[0155] An embodiment relates to a product comprising: an enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90% pharmacological activity of the kavalactones; and wherein the product provides relief from anxiety, lowers a sense of panic and

serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product.

[0156] In an embodiment, the product further comprising fruit juice, theanine and milk thistle. In an embodiment, the product further comprising fruit juice, theanine and vitamin B. In an embodiment, the product further comprising vitamin B. In an embodiment, the product further comprising magnesium. In an embodiment, the product further comprising lemon. In an embodiment, the product further comprising fruit juice, theanine, magnesium, vitamins, vitamin B, lime, lemon, milk thistle, or combinations thereof.

[0157] In an embodiment, the product comprising sugar, a sugar substitute, a sugar free substitute, a corn syrup, a high fructose corn syrup, lime, lemon, a citrus fruit, a citrus fruit juice, a rice syrup, an alcoholic beverage, gelatin, malt, a sodium salt, a potassium salt, a food color, a food flavor, a natural flavor, a preservative, a nut, an extract from a nut, or combinations thereof.

[0158] An embodiment relates to a product comprising: (a) an enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90% pharmacological activity of the kavalactones; (b) a tetrahydrocannabinol (THC) extract; and (c) a cannabidiol (CBD) extract; wherein the product contains 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the tetrahydrocannabinol extract, wherein the product contains 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the cannabidiol extract, wherein the product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product, and wherein the extraction media comprises an alcohol, a mixture of

alcohols, supercritical CO2, or a mixture of alcohol and supercritical CO2, and the solvent comprises a non-organic solvent.

[0159] In an embodiment, the tetrahydrocannabinol extract or the cannabidiol extract is obtained from hemp, hemp stalk, hemp stem, hemp seed, cannabis, cannabis stalk, cannabis stem, cannabis seed, cannabis flower or combinations thereof.

[0160] In an embodiment, the product comprises a beverage, an aerated beverage, a candy, a confectionary, an effervescent powder or tablet, a dietary supplement or combinations thereof.

[0161] In an embodiment, the product is in a solid form, a powder form, a paste form or a liquid form.

[0162] In an embodiment, the enhanced kava extract comprises the kavalactones comprising the kavain, the dihydrokavain, the methysticin, the dihydromethysticin, the yangonin and the demethoxyyangonin that constitute greater than 95% pharmacological activity of the kavalactones.

[0163] An enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90% pharmacological activity of the kavalactones; and wherein the product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product.

BRIEF DESCRIPTION OF THE FIGURES

[0164] FiG. 1 depicts a viscoelasticity temperature sweep plot for understanding the microstructure of the Noble Kava product connected to the organization of the molecules.

[0165] FiG. 2 depicts a particle size distribution plot for the calculation of surface weighted mean and volume weighted mean.

[0166] FIG. 3 depicts screen of Kava colorimeter after program loads.

[0167] FIG. 4 depicts screen of Kava colorimeter to click "Mode."

[0168] FIG. 5 depicts change "Rate" to "1" in screen of Kava colorimeter.

[0169] FIG. 6 depicts lamp adjustment during Kava colorimeter calibration.

[0170] FIG. 7 depicts screen of Kava colorimeter during graphical analysis.

[0171] FIG. 8 depicts graphical analysis screen of Kava colorimeter.

[0172] FIG. 9 depicts example of parameter calculation.

[0173] FIG. 10 depicts schematic diagram of the laboratory system to carry out Noble Kava extractions.

[0174] FIG. 11: Control and residual Noble Kava Root.

[0175] FIG. 12 depicts MUNSELL-1-1 extracts using CO2extraction.

[0176] FIG. 13 depicts MUNSELL-1-2 extracts using ethanolic extraction.

[0177] FIG. 14 depicts KAVA root fractions of MUNSELL-1-1 and MUNSELL-1-2.

DETAILED DESCRIPTION OF THE INVENTION

[0178] All references disclosed in the application are incorporated by reference, such as patent applications, patent publications and other publications in their entirety. All amount mentioned in % are in volume percentage, unless mentioned otherwise.

[0179] While this specification concludes with claims particularly pointing out and distinctly claiming that, which is regarded as the invention, it is anticipated that the invention can be more readily understood through reading the following detailed description of the invention and study of the included examples.

[0180] The present disclosure provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract. Further, the process to prepare the composition is also disclosed according to present invention.

[0181] DEFINITIONS

[0182] The terms “first,” “second,” “third,” “fourth,” and the like in the description and in the claims, if any, are used for distinguishing between similar elements and not necessarily for describing a particular sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments described herein are, for example, capable of operation in sequences other than those illustrated or otherwise described herein. Furthermore, the terms “include,” and “have,” and any variations thereof, are intended to cover a non-exclusive inclusion, such that a process, method, system, article, device, or apparatus that comprises a list of elements is not necessarily limited to those elements, but may include other elements not expressly listed or inherent to such process, method, system, article, device, or apparatus.

[0183] The terms “left,” “right,” “front,” “back,” “top,” “bottom,” “over,” “under,” and the like in the description and in the claims, if any, are used for descriptive purposes and not necessarily for describing permanent relative positions. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments of the apparatus, methods, and/or articles of manufacture described herein are, for example, capable of operation in other orientations than those illustrated or otherwise described herein.

[0184] No element, act, or instruction used herein should be construed as critical or essential unless explicitly described as such. Also, as used herein, the articles “a” and “an” are intended to

include items, and may be used interchangeably with "one or more." Furthermore, as used herein, the term "set" is intended to include items (e.g., related items, unrelated items, a combination of related items, and unrelated items, etc.), and may be used interchangeably with "one or more." Where only one item is intended, the term "one" or similar language is used. Also, as used herein, the terms "has," "have," "having," or the like are intended to be open-ended terms. Further, the phrase "based on" is intended to mean "based, at least in part, on" unless explicitly stated otherwise.

[0185] Unless otherwise defined herein, scientific and technical terms used in connection with the present invention shall have the meanings that are commonly understood by those of ordinary skill in the art. Further, unless otherwise required by context, singular terms shall include pluralities and plural terms shall include the singular. Generally, nomenclatures used in connection with, and techniques of, health monitoring described herein are those well-known and commonly used in the art.

[0186] The methods and techniques of the present invention are generally performed according to conventional methods well known in the art and as described in various general and more specific references that are cited and discussed throughout the present specification unless otherwise indicated. The nomenclatures used in connection with, and the procedures and techniques of embodiments herein, and other related fields described herein are those well-known and commonly used in the art.

[0187] As defined herein, "approximately," "about" can, in some embodiments, mean within plus or minus ten percent of the stated value. In other embodiments, "approximately" can mean within plus or minus five percent of the stated value. In further embodiments, "approximately" can mean within plus or minus three percent of the stated value. In yet other embodiments, "approximately" can mean within plus or minus one percent of the stated value.

[0188] When introducing elements of the present invention or the preferred embodiment(s) thereof, the articles "a," "an," "the" and "said" are intended to mean that there are one or more of the elements. The terms "comprising," "including" and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements.

[0189] The term "and/or" when used in a list of two or more items, means that any one of the listed items can be employed by itself or in combination with any one or more of the listed items. For example, the expression "A and/or B" is intended to mean either or both of A and B, i.e. A alone, B alone or A and B in combination. The expression "A, B and/or C" is intended to mean A alone, B alone, C alone, A and B in combination, A and C in combination, B and C in combination or A, B, and C in combination.

[0190] KAVA PRODUCT: a consumable product containing an ingredient derived from a Noble Kava plant.

[0191] PROCESSING: producing a Noble Kava product from an ingredient derived from a Noble Kava plant utilizing the steps described in one or more of claims.

[0192] KAVA EXTRACT: a consumable product derived or obtained from a Noble Kava plant.

[0193] METHOD: a planned way of doing something; an order or system; an orderly or systematic arrangement, sequence or the like.

[0194] CONFIGURED TO STABILIZE THE KAVA PRODUCT AGAINST MICROBIAL DECOMPOSITION: reducing the microbial count for a shelf life no less than 4 days under refrigeration temperatures. In some embodiments, a product as disclosed herein has a shelf life for at least 2 weeks at refrigeration temperatures or at ambient temperatures. In an embodiment, the refrigeration temperatures could range from about 0°C to about 10°C, or any value there between, such as 0°C, 1°C, 2°C, 3°C, 4°C, 5°C, 6°C, 7°C, 8°C, 9°C or 10°C. In alternative embodiments, a

beverage as disclosed herein has a shelf life for at least 3 months at ambient temperatures such as temperatures ranging from about 20°C to about 30°C, or any value therebetween, such as 20°C, 21°C, 22°C, 23°C , 24°C, 25°C, 26°C, 27°C, 28°C, 29°C, or 30°C.

[0195] The term "HUMAN EDIBLE OR DRINKABLE PRODUCT" refers to a product containing ingredients that are one or more food additives and/or generally recognized as safe (GRAS) by the U.S. Food and Drug Administration.

[0196] A "HOMOGENEOUS MIXTURE" is a solid, liquid or gaseous mixture that has the same proportions of its components throughout any given sample. Conversely, a "HETEROGENEOUS MIXTURE" has components in which proportions vary throughout the sample.

[0197] The term "ALCOHOL" refers to ethanol (also called ethyl alcohol).

[0198] The term "MIXTURE OF ALCOHOLS" refers to a mixture of alcohol-containing products.

[0199] The term "ALCOHOLIC BEVERAGE" refers to a beverage containing alcohol.

[0200] A "BEVERAGE" refers to a drinkable and potable (meaning, safe for human consumption) liquid, other than water.

[0201] A "ALCOHOL-FREE" refers to a product that contains no detectable alcohol.

[0202] A "NON-ALCOHOLIC" refers to a product containing less than 0.5 % alcohol by volume.

[0203] A "DEALCOHOLIZED" refers to a product containing less than 0.5 % alcohol by volume.

[0204] A "ALCOHOL-REMOVED" refers to a product containing less than 0.5 % alcohol by volume.

[0205] An "AQUEOUS SOLUTION" means a solution in which the solvent is water.

[0206] A "SOLUTION" is a homogeneous mixture composed of two or more substances.

[0207] A "SOLVENT" (from the Latin *solvō*, "loosen, untie, solve") is a liquid that dissolves a solid, resulting in a solution.

[0208] An "EMULSION" is a mixture of two or more liquids that are normally immiscible (unmixable or unblendable) owing to liquid-liquid phase separation. Emulsions are part of a more general class of two-phase systems of matter called colloids. Although the terms colloid and emulsion are sometimes used interchangeably, emulsion should be used when both phases, dispersed and continuous, are liquids. In an emulsion, one liquid (the dispersed phase) is dispersed in the other (the continuous phase).

[0209] An "EMULSIFIER" (also known as an "emulgent") is a substance that stabilizes an emulsion. One class of emulsifiers is known as "surface active agents," or surfactants. Emulsifiers are compounds that typically have a polar or hydrophilic (i.e. water-soluble) part and a non-polar (i.e. hydrophobic or lipophilic) part. Because of this, emulsifiers tend to have more or less solubility either in water or in oil. Emulsifiers that are more soluble in water (and conversely, less soluble in oil) will generally form oil-in-water emulsions, while emulsifiers that are more soluble in oil will form water-in-oil emulsions. In an embodiment, the emulsifier is a surfactant. The term "emulsifier" and "surfactant" is used interchangeably throughout the specification.

[0210] Two liquids can form different types of emulsions. As an example, oil and water can form, first, an oil-in-water emulsion, in which the oil is the dispersed phase, and water is the continuous phase. Second, they can form a water-in-oil emulsion, in which water is the dispersed phase and oil is the continuous phase. Multiple emulsions are also possible, including a "water-in-oil-in-water" emulsion and an "oil-in-water-in-oil" emulsion.

[0211] Emulsions, being liquids, do not exhibit a static internal structure. The droplets dispersed in the continuous phase (sometimes referred to as the "dispersion medium") are usually assumed to be statistically distributed to produce roughly spherical droplets. When molecules are ordered during liquid-liquid phase separation, they form liquid crystals rather than emulsions. Lipids, used

by all living organisms, are one example of molecules able to form either emulsions (e.g: spherical micelles; Lipoproteins) or liquid crystals (lipid bilayer membranes).

[0212] The diameters of the droplets constituting the dispersed phase usually range from approximately 10 nm to 100 μm; i.e., the droplets may exceed the usual size limits for colloidal particles. An emulsion is termed an oil/water (o/w) emulsion if the dispersed phase is an organic material and the continuous phase is water or an aqueous solution and is termed water/oil (w/o) if the dispersed phase is water or an aqueous solution and the continuous phase is an organic liquid (an "oil").

[0213] Emulsions contain both a dispersed and a continuous phase, with the boundary between the phases called the "interface." Emulsions tend to have a cloudy appearance because the many phase interfaces scatter light as it passes through the emulsion. Emulsions appear white when all light is scattered equally. If the emulsion is dilute enough, higher-frequency (low-wavelength) light will be scattered more, and the emulsion will appear bluer – this is called the "Tyndall effect." If the emulsion is concentrated enough, the color will be distorted toward comparatively longer wavelengths, and will appear more yellow. This phenomenon is easily observable when comparing skimmed milk, which contains little fat, to cream, which contains a much higher concentration of milk fat. One example would be a mixture of water and oil.

[0214] Two special classes of emulsions – microemulsions and nanoemulsions, with droplet sizes below 100 nm – appear translucent. This property is due to the fact that light waves are scattered by the droplets only if their sizes exceed about one-quarter of the wavelength of the incident light. Since the visible spectrum of light is composed of wavelengths between 390 and 750 nanometers (nm), if the droplet sizes in the emulsion are below about 100 nm, the light can penetrate through the emulsion without being scattered. Due to their similarity in appearance, translucent nanoemulsions and microemulsions are frequently confused. Unlike translucent nanoemulsions,

which require specialized equipment to be produced, microemulsions are spontaneously formed by "solubilizing" oil molecules with a mixture of surfactants, co-surfactants, and co-solvents. The required surfactant concentration in a microemulsion is, however, several times higher than that in a translucent nanoemulsion, and significantly exceeds the concentration of the dispersed phase. Because of many undesirable side-effects caused by surfactants, their presence is disadvantageous or prohibitive in many applications. In addition, the stability of a microemulsion is often easily compromised by dilution, by heating, or by changing pH levels.

[0215] Common emulsions are inherently unstable and, thus, do not tend to form spontaneously. Energy input – through shaking, stirring, homogenizing, or exposure to power ultrasound – is needed to form an emulsion. Over time, emulsions tend to revert to the stable state of the phases comprising the emulsion. An example of this is seen in the separation of the oil and vinegar components of vinaigrette, an unstable emulsion that will quickly separate unless shaken almost continuously. There are important exceptions to this rule – microemulsions are thermodynamically stable, while translucent nanoemulsions are kinetically stable.

[0216] Whether an emulsion of oil and water turns into a "water-in-oil" emulsion or an "oil-in-water" emulsion depends on the volume fraction of both phases and the type of emulsifier.

[0217] Emulsion stability refers to the ability of an emulsion to resist change in its properties over time. There are four types of instability in emulsions: flocculation, creaming/sedimentation, coalescence, and Ostwald ripening. Flocculation occurs when there is an attractive force between the droplets, so they form flocs, like bunches of grapes. This process can be desired, if controlled in its extent, to tune physical properties of emulsions such as their flow behavior. Coalescence occurs when droplets bump into each other and combine to form a larger droplet, so the average droplet size increases over time. Emulsions can also undergo creaming, where the droplets rise to the top of the emulsion under the influence of buoyancy, or under the influence of the centripetal

force induced when a centrifuge is used. Creaming is a common phenomenon in dairy and non-dairy beverages (i.e. milk, coffee milk, almond milk, soy milk) and usually does not change the droplet size. Sedimentation is the opposite phenomenon of creaming and normally observed in water-in-oil emulsions. Sedimentation happens when the dispersed phase is denser than the continuous phase and the gravitational forces pull the denser globules towards the bottom of the emulsion. Similar to creaming, sedimentation follows Stoke's law.

[0218] An appropriate "surface active agent" (or "surfactant") can increase the kinetic stability of an emulsion so that the size of the droplets does not change significantly with time. The stability of an emulsion, like a suspension, can be studied in terms of zeta potential, which indicates the repulsion between droplets or particles. If the size and dispersion of droplets does not change over time, it is said to be stable. For example, oil-in-water emulsions containing mono- and diglycerides and milk protein as surfactant showed that stable oil droplet size over 28 days storage at 25°C.

[0219] Monitoring physical stability: The stability of emulsions can be characterized using techniques such as light scattering, focused beam reflectance measurement, centrifugation, and rheology. Each method has advantages and disadvantages.

[0220] A “FOOD EMULSIFIER” is a emulsifier that can be used as an ingredient of food and acts as a border between two immiscible liquids such as oil and water, allowing them to be blended into stable emulsions.

[0221] Examples of food emulsifiers include: polysorbates; carrageenan; guar gum; canola oil; egg yolk – in which the main emulsifying and thickening agent is lecithin. In fact, lecithos is the Greek word for egg yolk; mustard – where a variety of chemicals in the mucilage surrounding the seed hull act as emulsifiers; soy lecithin is another emulsifier and thickener; pickering stabilization – uses particles under certain circumstances; sodium phosphates; mono- and diglycerides - a common emulsifier found in many food products (coffee creamers, ice-creams, spreads, breads,

cakes); sodium stearoyl lactylate; DATEM (diacetyl tartaric acid esters of mono- and diglycerides) – an emulsifier used primarily in baking; and simple cellulose – a particulate emulsifier derived from plant material using only water.

[0222] As used herein, the term "EMULSIFIED KAVALACTONES" is defined as Kavalactones that is suspendable in water, for example, via emulsification. As used herein the "emulsified Kavalactones" or "emulsified kava extract" are used interchangeable.

[0223] The term "PARTICLE" and "PARTICULATE" are used interchangeably to mean a solid particle (fleck), a liquid particle (droplet) or a gaseous particle (bubble).

[0224] The "PARTICLE SIZE" or "PARTICULATE SIZE" is a dimension of a solid particle (fleck), a liquid particle (droplet), or a gaseous particle (bubble).

[0225] MICROBIAL COUNT: a microbial count, which also referred to as a colony-forming unit (CFU, cfu, Cfu) in microbiology, is a unit used to estimate the number of viable bacteria or fungal cells in a sample. Viable is defined as the ability to multiply via binary fission under the controlled conditions. Counting with colony-forming units requires culturing the microbes and counts only viable cells, in contrast with microscopic examination which counts all cells, living or dead. The visual appearance of a colony in a cell culture requires significant growth, and when counting colonies, it is uncertain if the colony arose from one cell or a group of cells. Expressing results as colony-forming units reflects this uncertainty.

[0226] SHELF LIFE: a shelf life of a Noble Kava product is period during which the Noble Kava product will not undergo significant physicochemical, microbiological or sensory changes. An unstable product will have a short shelf life, whereas a stable product will have a long shelf life.

[0227] ASEPTIC: Food and Drug Administration ("FDA") approved level of aseptic.

[0228] HOMOGENIZING: intimate mixing of at least two components to form the Noble Kava product or an intermediate used for making the Noble Kava product.

[0229] PRESSURE: force per unit area.

[0230] PERIOD: to the interval of time.

[0231] CONFIGURED TO: capable of or suitable for.

[0232] STABILIZE: to hold steady so as to limit fluctuations.

[0233] STAGE: step.

[0234] SUBSTANCE: physical material from which something is made or which has discrete existence.

[0235] ONE OR MORE: not only one.

[0236] POWDER: a loose grouping or aggregation of particulate matter or solid particles, preferably smaller than 1000 micrometers.

[0237] TABLET: a small mass of containing a Noble Kava product.

[0238] PULSED: intermittent rather than constant.

[0239] FIELD: a region or space in which a given effect (such as electricity or magnetism) exists.

[0240] NEGATIVE: less than.

[0241] COOL: removing heat.

[0242] STERILIZATION: a method of treating microorganisms so that the probability of survival of spores can be less than 1×10^{-6}.

[0243] OPTIONALLY: left to choice, not mandatory.

[0244] Aerobic mesophilic plate is defined as a culture plate to grow microbial organisms, which grow in the presence of oxygen at moderate temperatures between 25 to 40°C; 77 to 104°F. The term aerobic describes in presence of oxygen, meso describes moderate and philic describes liking.

[0245] Yeast Count is a method to a determine the number of yeast cell concentration.

[0246] Mould count is measuring the number of mould (= fungi) spores in a cubic meter of air.

[0247] As used herein, "GEL" is a semi-solid that which exhibits no flow when in the steady-state. It can have properties ranging from soft and weak to hard and tough. It can be in a substantially dilute cross-linked system. A gel can be phenomenologically as a soft, solid or solid-like material consisting of two or more components, one of which is a liquid, present in substantial quantity.

[0248] By weight, gels are mostly liquid, yet they behave like solids due to a three-dimensional cross-linked network within the liquid. It is the crosslinking within the fluid that gives a gel its structure (hardness) and contributes to the adhesive stick (tack). In this way, gels are a dispersion of molecules of a liquid within a solid medium.

[0249] In one embodiment, the Noble Kava product is obtained or derived from selected parts of the Noble Kava plants that include stems, roots, and rhizomes. In another embodiment, the Noble Kava product is obtained or derived from selected parts of the Noble Kava plants that include and/or dried roots, and/or dried rhizomes, peeled, and/or dried rhizomes, and/or basal stems.

[0250] In another embodiment, the Noble Kava product is obtained or derived mainly from the roots of the Noble Kava plant, but the source of the Noble Kava product is not restricted only from the roots and can also be harvested from other parts of the Noble Kava plants. In another embodiment, Noble Kava product is obtained or derived from or prepared using lower part of the basal stem. rhizomes and/or roots to make Noble Kava comprising compositions. In another embodiment, Noble Kava product is obtained or derived from or prepared using lower part of the basal stem, rhizomes and/or roots to make Noble Kava comprising compositions including beverages, aerated beverages, candies, and confectionaries. In another embodiment, Noble Kava product is obtained or derived from or prepared using of intact roots, rhizomes, chips, i.e., stems, or powdered forms to make dried Noble Kava comprising compositions. In another embodiment, dried Noble Kava comprising compositions may be in the form of intact roots, rhizomes, chips or powdered forms

[0251] All part of Noble Kava plants contain water, starch, dietary fibers, sugar, proteins, minerals and Kavalactones. Noble Kava plants contain water, different types of starches, different types of dietary fibers, different types of sugar, different types of proteins, different types of minerals and Kavalactones. The Noble Kava plants are harvested after they have matured in order for them to contain higher amounts of Kavalactone or high Kavalactone content. Kavalactones provide the pharmacological activities that allows the Noble Kava product to produce or induce a state of calmness, relaxation and well-being without diminishing cognitive performance or causing negative side effects.

[0252] Generally, the roots, rhizomes and/or lower part of the basal stem of the harvested mature Noble Kava plants contain higher amounts of Kavalactone or high Kavalactone content and are the preferred part of the plant that is used as a source for making Noble Kava product for the purpose of the embodiments described herein. In one embodiment, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain higher concentration of Kavalactone content in the Noble Kava product. In another embodiment, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain higher amounts of Kavalactone content. In another embodiment, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain more favorable compositional mix of Kavalactone in the Noble Kava product. In one embodiment, the Noble Kava product of the embodiment, the Noble Kava plants are usually harvested after a minimum time of 2 years after previous harvest, so they can be used as a source to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone content or favorable compositional mix of Kavalactone in the Noble Kava product. In another embodiment, the Noble Kava product of the embodiment, the Noble Kava plants are usually harvested after a minimum time of 3 years, so they can be used as a source to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone

content or more favorable compositional mix of Kavalactone in the Noble Kava product. Preferably a minimum of 3 to 4 years or 5 years is desired before the plants are harvested so they can be used as a source to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone content or favorable compositional mix of Kavalactone in the Noble Kava product.

[0253] In one embodiment, Kavalactones are main source or the principal ingredients for serving as a relaxant, providing relief from anxiety, providing calming benefits, providing relief from nausea producing a state of calmness, relaxation and well-being without diminishing cognitive performance. There are different types of Kavalactones present in the Noble Kava plant. Six of these Kavalactones make up greater than 90 and in some cases 95% of the total Kavalactones pharmacological activity. The six major Kavalactones are Kavain, Dihydrokavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin.

[0254] In one embodiment, untreated Noble Kava root extract was subjected to microbiological testing. This gives a clear picture for understanding the changes in stability and extended shelf life of treated Noble Kava products, keeping in mind untreated products are less stable than treated products. As used herein, the untreated product defined as products that have not undergone any treatment step to improve the physical or chemical properties of the product. The treated product is defined that products that has undergone any treatment step to improve the physical or chemical properties of the product. This less stable nature is due to presence of microorganisms in Noble Kava juices or Noble Kava products. In the case of unicellular microorganisms like bacteria, the entire organism is reproduced by the reproduction of the cell. Consequently, microbial growth is fundamentally identical with microbial reproduction. It is important to determine the number of bacteria i.e., enumeration of microorganisms such as bacteria to understand the rates of microbial growth and death. It is essential to determine the number of microorganisms such as bacteria in a

given Noble Kava product. For example, the ability to determine the safety of Noble Kava products depends on knowing the levels of microorganisms such as bacteria in those products. The most common procedure for the enumeration of bacteria in a sample such as Noble Kava product is the viable plate count. In this method, successive dilutions of a Noble Kava product containing viable microorganisms are plated onto an appropriate growth medium. The suspension is either dispersed on the surface of agar plates referred to as spread plate method or the suspension is mixed with molten agar followed by pouring in plates and allowed to solidify referred to as pour plate method. The plates are then incubated under conditions that allow microbial reproduction so that colonies develop that can be seen without the assistance of a microscope. It is assumed that each bacterial colony arises from distinct cell that has undergone cell division. Therefore, by counting the number of colonies and accounting for the dilution factor, the number of bacteria in the original Noble Kava product can be determined. The viable count is an approximation of the number of cells. Because some organisms exist as pairs or assemblies and because mixing and shaking of the Noble Kava sample does not constantly separate all the cells, we really get a count of the colony forming units (CFU). Unicell or assembly of cells will yield one colony, therefore recording results for a viable count, it is routine to record the results as colony forming units per ml (cfu/ml) or per gram (cfu/g) of test material.

[0255] In one embodiment, enumeration of aerobic bacteria was performed at 35°C and aerobic plate count was found to be 8.40 x 10^6 cfu/g. In another embodiment, enumeration of aerobic bacteria was performed at 35°C using PCA Agar-P and aerobic plate count was found to be E [NZ] <100 >25 000 000 /g.

[0256] An embodiment relates to techniques utilizing a treatment such as ultra-high temperature (UHT) pasteurization and/or sterilization, optionally with microwave volumetric heating (MVT), pascalization [also referred to as bridgmanization or high-pressure processing (HPP) or high

hydrostatic pressure (HHP)] for processing and preserving Noble Kava product and process of making it stable. An embodiment relates to a sterilized or similarly treated Noble Kava (*Piper methysticum*) product and a new process for producing shelf stable or extended shelf life Noble Kava juices and other Noble Kava products.

[0257] An embodiment provides a method for treating Noble Kava to reduce the microbial count and ensure safety of the resulting product involving ultra-high temperature (UHT) pasteurization and/or sterilization, wherein temperature range comprising 135°C (275°F)-190°C(375°F), wherein cooling is with or without flash, wherein treatment process involving is with or without homogenization, wherein treatment process involving is with or without the use of processing aids or enzymes, and wherein treatment process involving is with or without packaging of the Noble Kava product for making it stable.

[0258] A processing aid is a substance used in the production of processed food, and which may end up in the finished product, but which is not, by law, required to be disclosed to the consumer as an ingredient. Under the United Kingdom food labelling regulations, a "processing aid" is defined as follows: "Processing aid means any substances not consumed as a food by itself, intentionally used in the processing of raw materials, foods or their ingredients, to fulfil a certain technological purpose during treatment or processing, and which may result in the unintentional but technically unavoidable presence of residues of the substance or its derivatives in the final product, provided that these residues do not present any health risk and do not have any technological effect on the finished product."

[0259] Under the law of the United States of America, a substance is legally a "processing aid" and can be excluded from ingredients labels if it meets any of the following criteria:

[0260] 1. It is added to the food but later removed. E.g. activated charcoal, which removes certain impurities.

[0261] 2. It is added to the food but gets converted into a substance already present in the food. E.X. a pH adjuster that converts to salt and does not significantly add to the food's salt level.

[0262] 3. It is added for a technical effect during processing but is not present at "significant" levels in the food. E.g. a preservative added to an ingredient, like anti-caking agent sodium silicoaluminate in the seasoning of some sausages.

[0263] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product wherein treatment process involves microwave pasteurization and/or sterilization using microwave volumetric heating (MVH) of the Noble Kava product for making it stable.

[0264] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product wherein treatment process involves the general technique known by either of the names such as pascalization or bridgmanization or high-pressure processing (HPP) or high hydrostatic pressure (HHP) of the Noble Kava product for making it stable.

[0265] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product involving traditional pasteurization known as high temperature short time (HTST) wherein temperature range comprising 65oC (149°F)-190°C (375°F), wherein cooling is with or without flash, wherein treatment process involving is with or without homogenization and wherein treating process is with or without packaging of the Noble Kava product for making it stable.

[0266] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product wherein treatment process involves pulsed electric field (PEF) of the Noble Kava product for making it stable.

[0267] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product wherein treatment process involves non-ionizing radiation sterilization of the Noble Kava product for making it stable.

[0268] An embodiment provides a process for treating Noble Kava product to reduce the microbial count and ensure safety of the resulting Noble Kava product wherein treatment process involves ionizing radiation sterilization of the Noble Kava product for making it stable.

[0269] Ultra-high temperature (UHT) method of treatment of the Noble Kava product, i.e., UHT pasteurization, involves heating the liquid Noble Kava product continuously, and ensuring that each particle of the Noble Kava product has been held at the predetermined ultra-high temperature for a lowest extent of time. The UHT technique can be unified into a sterilization technique, in which the Noble Kava product is heated to a temperature of 275°F-375°F or above, and is held for a consistent holding time to ensure that the microorganisms and their spores in the Noble Kava product are destroyed. Then the sterilized Noble Kava product is packed aseptically and aseptically sealed. The purpose here is to allow the liquid Noble Kava product to be stored at room temperature indefinitely without spoilage due to action of microorganisms. However, the method of ultra-high pasteurization processing may modify the flavor or necessary color or texture of the Noble Kava product and may result in a heated or burnt flavor in the Noble Kava product. The UHT treated Noble Kava product is then subjected for microbiological test in the embodiment. In one embodiment, the analysis of the UHT treated Noble Kava product sample is carried out at 31°C. In one embodiment, enumeration of yeasts and molds is performed at 35°C and plate count is found to be <10 cfu/g. In another embodiment, enumeration of aerobic bacteria was performed at 35°C using PCA Agar-P and aerobic plate count is found to be E [NZ] <100 >25 000 000 /g (2-3). In one embodiment, enumeration of yeasts and molds were performed at 35°C using Agar-P and aerobic plate count is found to be E [NZ] <10 >15 000 /g (1-2).

[0270] Microwave volumetric heating (MVH) treatment of Noble Kava juice or Noble Kava product is conducted in the embodiment for microbial degradation. The competence for rapid volumetric heating using strong but relatively low-cost equipment can offer initial standards for simple microwave heated reaction vessels. Microwave accelerated heating for pasteurizing the biological products have been the subject of rigorous research and development activity but typically at a very small scale and volume levels confined only to a bench top scale. An embodiment provides the application of microwave heating treatment for pasteurization of Noble Kava juice or Noble Kava product. It enables the volumetric heating of the Noble Kava juice or Noble Kava product preceding or concurrently with the treatment processing. A rapid heating is accomplished during this microwave volumetric heating treatment which destroys the microorganisms present in Noble Kava juice or Noble Kava product. In some embodiment, the application of microwave volumetric heating at range 460 MHz to 2450 MHz is accomplished to destroy the microorganisms present in Noble Kava juice or Noble Kava product. This microwave volumetric heating for pasteurization of the Noble Kava juice or Noble Kava product is performed under controlled conditions using pressurized vessels such as steel vessels employed in continuously stirred reactors in the embodiment. In one embodiment, low frequency of 460 MHz by microwave volumetric heating is accomplished to destroy the microbes in Noble Kava juice or Noble Kava product. In another embodiment, frequency of 915 MHz used in industrial conditions by microwave volumetric heating is accomplished to destroy the microbes in Noble Kava juice or Noble Kava product. In one embodiment, frequency of 2450 MHz used in domestic conditions by microwave volumetric heating is accomplished to destroy the microbes in Noble Kava juice or Noble Kava product.

[0271] Viscoelastic measurements are suitable tools for finding evidence about the microstructure of the Noble Kava product connected to the organization of the molecules in the Noble Kava

product. The presence of a broad dispersion in Noble Kava product can be represented by the viscoelasticity temperature sweep plot derived from experimental values of the dynamic moduli namely G' (storage modulus) and G" (loss modulus). The measurements of parameters such as temperature, frequency, angle (delta), storage modulus (G') and loss modulus (G") with varied timings is shown in **Table 2**.

Table 2: Parameters for measuring Viscoelasticity of gel like Noble Kava product

S. No.	Time (min)	Temperature (°C)	Frequency (Hz)	Delta (degrees)	G' (Pa)	G" (Pa)
1	0.1	30.2	1	95.73	-0.01314	0.131
2	1	30.9	1	147.4	-0.04606	0.02944
3	2	32	1	135.7	-0.05828	0.05693
4	3	33	1	173.6	-0.04603	5.13E-03
5	3.9	33.9	1	149.1	-0.04593	0.02748
6	5	35	1	163	-0.0375	0.01149
7	5.9	35.9	1	175.4	-0.04584	3.71E-03
8	7	37	1	93.2	-2.88E-03	0.05149
9	7.9	37.9	1	152.8	-0.02767	0.01421
10	9	39	1	118.8	-0.0104	0.0189
11	9.9	39.9	1	145.4	-0.04667	0.0322
12	11	41	1	125.6	-0.02737	0.03824
13	11.9	41.9	1	127	-0.01777	0.0236
14	13	42.9	1	122.2	-0.01737	0.02761

15	13.9	43.9	1	155.3	-0.02857	0.01315
16	15	45	1	172.7	-0.06386	8.19E-03
17	15.9	45.9	1	100.4	-4.01E-03	0.02189
18	17	47	1	93.78	-1.02E-03	0.01551
19	17.9	47.9	1	84.01	3.28E-03	0.03126
20	19	49	1	69.37	0.01288	0.03421
21	20	49.9	1	66.46	0.01354	0.03108
22	21	51	1	53.14	0.02177	0.02904
23	22	52	1	57.36	0.01993	0.03111
24	22.9	52.9	1	36.44	0.03419	0.02524
25	24	54	1	18.17	0.02992	9.82E-03
26	24.9	54.9	1	61.87	0.03167	0.05925
27	26	56	1	32.21	0.04995	0.03146
28	26.9	56.9	1	23.51	0.06635	0.02887
29	28	58	1	45.25	0.05008	0.05051
30	28.9	58.9	1	18.37	0.08916	0.02961
31	30	60	1	21.5	0.08829	0.03477
32	30.9	61	1	31.3	0.0917	0.05575
33	32	62	1	21.58	0.119	0.04706
34	32.9	62.9	1	5.142	0.1502	0.01352
35	34	64	1	17.52	0.199	0.0628
36	34.9	64.9	1	11.44	0.2497	0.05053
37	36	66	1	16.67	0.3186	0.09541

38	36.9	66.9	1	15.97	0.6129	0.1754
39	38	67.9	1	16.53	1.724	0.5118
40	38.9	69	1	16.28	6.044	1.765
41	40	70	1	13.1	16.26	3.785
42	40.9	70.9	1	10.54	29.48	5.484
43	42	72	1	9.182	46.69	7.548
44	42.9	73	1	8.668	63.07	9.615
45	44	74	1	8.371	82.09	12.08
46	44.9	74.9	1	7.915	100.1	13.92
47	46	76	1	8.177	119.6	17.19
48	46.9	76.9	1	8.083	137.5	19.53
49	48	78	1	8.252	157	22.77
50	48.9	78.9	1	8.527	173.7	26.04
51	50	79.9	1	8.51	191.8	28.69
52	50.9	80.9	1	9.149	204.9	33
53	52	82	1	9.464	220	36.67
54	52.9	83	1	10.29	231.2	41.97
55	54	84	1	10.82	242	46.25
56	54.9	84.9	1	10.92	253.5	48.92
57	56	86	1	11.67	261.9	54.1
58	57	87	1	12.44	267.1	58.94
59	58	88	1	13.21	271.6	63.74
60	59	89	1	13.99	272.5	67.92

61	60	90	1	14.82	272.3	72.03
62	60.9	91	1	15.69	268.3	75.35
63	62	92	1	16.65	262.9	78.59
64	63	92.9	1	17.02	260.8	79.83
65	64	94	1	18.35	250.4	83.05
66	65	95	1	19.73	238.9	85.7

[0272] The objective is to determine the viscoelastic behavior of a gel like treated Noble Kava product by plotting G' (storage modulus) and G" (loss modulus) measured in Pascal (Pa) units versus temperature measured in Celsius (^{o}C) units. The plot thus obtained called as viscoelasticity temperature sweep plot is shown in **FIG. 1**. From the plot, it is clear that when temperature reaches 69^{o}C a drastic increase in storage modulus G' and loss modulus G" can be observed from **FIG. 1**. From 70^{o}C onwards there is a steady increase in G' up to 89^{o}C can be noticed from the plot shown in **FIG. 1**. Once the temperature reaches 90^{o}C the value of G' starts decreasing and continues to decrease gradually up to 95^{o}C can be seen from the plot shown in **FIG. 1** but to a less extent. This indicates that the viscosity of the gel like Noble Kava product is high below 69^{o}C and started to decrease with increase in temperature. At low temperature, in Noble Kava product, due to high viscosity molecules are very close to each other and molecular collisions are less. When the temperature increases, molecules will be activated and involves in collisions to a greater extent. This is because rate of molecular collisions increases with increase in temperature. This decreases the viscosity of the gel like Noble Kava product. For storage modulus (G'), this decrease in viscosity extends up to 89^{o}C. After 89^{o}C the viscosity again slightly increases up to 95^{o}C but to a less extent. On the other hand, after 70^{o}C there is a steady increase in loss modulus (G") can be

seen up to 95°C from **FIG. 1**. This observation also shows that viscosity is high below 69°C and gradually increases up to 95°C. In one of the embodiments, the viscosity of the gel like Noble Kava product is high at lower temperature preferably below 69°C. In another embodiment, the viscosity of the gel like Noble Kava product is low at higher temperature preferably above 69°C. In one of the embodiments, the storage modulus G' of the gel like Noble Kava product is low at lower temperature preferably below 69°C. In one of the embodiments, the storage modulus G' of the gel like Noble Kava product is high at higher temperature preferably above 69°C. In one of the embodiments, the storage modulus G' of the gel like Noble Kava product is low at higher temperature preferably above 90°C. In one of the embodiments, the loss modulus G" of the gel like Noble Kava product is low at lower temperature preferably below 69°C. In one of the embodiments, the storage modulus G" of the gel like Noble Kava product is high at higher temperature preferably above 69°C.

[0273] In an embodiment, the noble kava extract is emulsified to hold Kavalactones in a suspension. The enhanced kava extract is emulsified using emulsifier. In an embodiment, the surfactant employed in present invention can be any known emulsifier known to a person skilled in the art. In an embodiment, the surfactant is selected from, but not limited to glycerin, polysorbates such as polysorbate-80 (a nonionic surfactant and emulsifier often used in foods and cosmetics; it is a synthetic compound that is a viscous, water-soluble yellow liquid), and Lecithin such as sunflower lecithin. In an embodiment, different emulsifier known to person skilled in the art can be mixed to emulsify noble kava extract and hold the Kavalactones in the suspension, for example: In one embodiment, glycerin and polysorbate-80 are used together to emulsify Kavalactones. In another embodiment, glycerin and sunflower lecithin are used together to emulsify Kavalactones. Yet, in another embodiment, polysorbate-80 and sunflower lecithin are used together to emulsify Kavalactones. In another embodiment, glycerin, polysorbate-80 and

sunflower lecithin are used together to emulsify Kavalactones. In an embodiment, the emulsifier binds with one end to kava extract and with another end to water, such that Kavalactones is held suspended in the solution.

[0274] In an embodiment, the emulsifier, which can be any emulsifier disclosed in the present application including glycerin, polysorbate (e.g., polysorbate-80) and sunflower lecithin, is added a percentage weight of the emulsion in a range with the lower limit being about 0.01 wt.%, about 0.05 wt.%, about 0.1 wt.%, 0.5 wt.%, about 1 wt.%, about 1.5 wt.%, about 2 wt.%, about 3 wt.%, about 4 wt.%, about 5 wt.%, about 6 wt.%, about 7 wt.%, about 8 wt.%, about 9 wt.% and about 10 wt.% in increments of 0.01 wt.% from about 0.01 wt.% to about 10 wt.%, and with the upper limit being about 11 wt.% to about 40 wt.% in increments of 1 wt.% from 11 wt.% to 40 wt.% such that the upper limit include 11 wt.%, 12 wt.%, 13 wt.%, 14 wt.%, 15 wt.%, 16 wt.%, 17 wt.%, 18 wt.%, 19 wt.%, 20 wt.%, 21 wt.%, 22 wt.%, 23 wt.%, 24 wt.%, 25 wt.%, 26 wt.%, 27 wt.%, 28 wt.%, 29 wt.%, 30 wt.%, 31 wt.%, 32 wt.%, 33 wt.%, 34 wt.%, 35 wt.%, 36 wt.%, 37 wt.%, 38 wt.%, 39 wt.% and 40 wt.%.

[0275] In an embodiment, the kava extract comprising Kavalactones is suspended in the solution in the form of particulates. The “kava particle” has used herein is referred as a minute portion of a kava extract, with size ranging from about 0.01 μm to about 2000.0 μm, and that remain suspended in the water-soluble liquid solution for a definite time. The term “kava particles” or “particles” or “particulates” are interchangeable used throughout the application. In an embodiment, the stability of kava particles to remain in the suspended time for at least 30 days. In an embodiment, the particles remain suspended in the solution for at least 45 days, 3 months, 6 months, 1 year or more than one year. As used herein the term, “stability” is defined as minimum time in which more than 50% of the kava particulates present in the kava product has settled or precipitated down in the solution.

[0276] In an embodiment, the suspension is water soluble liquid. In another embodiment, the suspension with the kava particles can be diluted to control the alcohol content in the kava product or kava juice. In another embodiment, the kava product or kava juice has alcohol content less than 0.05% v/v of the kava product or kava juice.

[0277] Measurement of particle size of Noble Kava product and understanding how it affects the products and processes were analyzed in the embodiment. This analysis is carried out because of its importance in understanding the physical property of particulate samples related to particle size of the Noble Kava product. Particle size measurement is a critical parameter in the preparation of Noble Kava products. Various properties of Noble Kava products such as reactivity, stability, efficacy, texture, appearance, flowability, viscosity, packing density and porosity, were influenced by particle size of the Noble Kava product. The essential parameters such as volume and particle size of the treated Noble Kava product is shown in **Table 3**. Static light scattering procedures like laser diffraction will give a volume weighted distribution. Here the influence of each particle of the Noble Kava juice and other Noble Kava products in the distribution relates to the volume of that particle in the Noble Kava juice or Noble Kava product which is equivalent to mass if the density is uniform as well as relative contribution will be proportional to cube of the particle size $[(size)^3]$ of the Noble Kava juice or Noble Kava products. This is really useful from a commercial viewpoint as the distribution signifies the composition of the Noble Kava juice and other Noble Kava products in terms of its volume or mass, and consequently its potential worth. Various values of volume and particle size of the Noble Kava juice sample were plotted against each other to form a particle size distribution plot as shown in **FIG. 2**. This is an example of normal distribution curve showing a bi-modal particle size distribution. The volume moment mean, also referred to as De Brouckere Mean Diameter, which is applicable for Noble Kava juice and other Noble Kava food samples as it mirrors the size of those particles which constitute the bulk of the sample volume.

The De Brouckere mean diameter is the mean of a particle size distribution weighted by the volume (also called volume-weighted mean diameter, volume moment mean diameter. or volume-weighted mean size). De Brouckere mean diameter is the mean diameter, which is directly obtained in particle size measurements, where the measured signal is proportional to the volume of the particles. It is more sensitive to the existence of large particulates in determining the size distribution.

[0278] It is very clear from **Table 3** that when the particle size is 1.233 μm the volume of the Noble Kava juice sample is 0.13%. This gradually increases and pass through a maximum when particle size is 12.328 μm corresponding to volume 11.39%. Further increase in particle size gradually decreases the volume of the Noble Kava juice sample as shown in distribution curve which starts from 10.90% corresponding to particle size 15.199 μm. This decrease in volume goes up to 1.91% for which size of the particle is 43.288 μm. Again, volume of the Noble Kava sample increases from 53.307 μm corresponding to 2.26% of volume. This increase in volume reaches a maximum value of 3.16% corresponding to particle size 123.285 μm. The volume drops once again from 2.26% for which particle size is 151.991 μm up to 0.14% corresponding to 811.131 μm. It can be noted from the **FIG. 2** that below the particle size of 1.233 μm and above 811.131 μm, the Noble Kava sample has 0.00% volume. From the **FIG. 2**, it is clear that there are two maxima observed in the plot of volume in percent versus particle size. The surface area mean which is referred to as Sauter Mean Diameter is one of the most appropriate way where specific surface area is significant such as bioavailability, reactivity and dissolution for the Noble Kava juice sample in the embodiment. Sauter mean diameter is an average of particle size. It is also most sensitive to the existence of fine particulates in the size distribution of the Noble Kava juice or Noble Kava product. In one of the embodiments, Noble Kava juice examined as average sample with particle size ranging from 0.020 to 2000.0 μm is analyzed in which weighted residual is

0.689% and concentration of the Noble Kava juice is 0.0174% with specific surface area of 0.57 m^2/g and surface weighted mean D[3,2] is observed at an average of particle size 11.380 µm. The D[3,2] is Surface Area Moment Mean or Sauter Mean Diameter In another embodiment, Noble Kava juice examined as average sample with particle size ranging from 0.020 to 2000.0 µm is analyzed in which weighted residual is 0.689% and concentration of the Noble Kava juice is 0.0174% and volume weighted mean D[4,3] is observed at an average of particle size 31.962 µm. The D[4,3] is Volume or Mass Moment Mean or De Brouckere Mean Diameter.

Table 3: Parameters for the Particle Size Distribution Plot

S. No.	Size (µm)	Volume in %	S.No.	Size (µm)	Volume in %
1	0.010	0.00	16	0.231	0.00
2	0.012	0.00	17	0.285	0.00
3	0.015	0.00	18	0.351	0.00
4	0.019	0.00	19	0.433	0.00
5	0.023	0.00	20	0.534	0.00
6	0.028	0.00	21	0.658	0.00
7	0.035	0.00	22	0.811	0.00
8	0.043	0.00	23	1.000	0.00
9	0.053	0.00	24	1.233	0.13
10	0.066	0.00	25	1.520	0.23
11	0.081	0.00	26	1.874	0.24
12	0.100	0.00	27	2.310	0.22
13	0.123	0.00	28	2.848	0.34
14	0.152	0.00	29	3.511	0.85

15	0.187	0.00	30	4.329	1.99

Table 3: Parameters for the Particle Size Distribution Plot (continued)

S. No.	Size (µm)	Volume in %	S.No.	Size (µm)	Volume in %
31	5.337	3.79	52	432.876	0.20
32	6.579	6.08	53	533.670	0.14
33	8.111	8.51	54	657.933	0.00
34	10.000	10.48	55	811.131	0.14
35	12.328	11.39	56	1000.000	0.00
36	15.199	10.90	57	1232.847	0.00
37	18.738	9.11	58	1519.911	0.00
38	23.101	6.57	59	1873.817	0.00
39	28.480	4.13	60	2310.130	0.00
40	35.112	2.47	61	2848.036	0.00
41	43.288	1.91	62	3511.192	0.00
42	53.367	2.26	63	4328.761	0.00
43	65.793	3.02	64	5336.699	0.00
44	81.113	3.62	65	6579.332	0.00
45	100.000	3.69	66	8111.308	0.00
46	123.285	3.16	67	10000.000	0.00
47	151.991	2.25			
48	187.382	1.31			
49	231.013	0.61			

50	284.804	0.25			
51	351.119	0.16			

[0279] In an embodiment, the noble kava product is water soluble. As used herein, "water soluble" is defined as a property to dissolve in water. The alcohol content in the noble kava product can be adjusted. In an embodiment, the noble kava product is non-alcoholic. As used herein, "non-alcoholic" is defined as containing less than 0.5 percent alcohol by its volume.

[0280] In an embodiment, the noble kava product is formulated using process comprising two steps: a) The first step comprises extracting noble kava extract; b) The second step comprises making the kava extract in particulates and suspending the particulates in the suspension.

[0281] In an embodiment, the extraction of noble kava extract from a kava root uses an organic extraction procedure. The organic procedure employs solvents such as acetone, ethanol, methanol etc. In an embodiment, the extraction is using ethanol. In an embodiment, the ethanol extraction employs dissolving kava root in ethanol and centrifuging it to get a solution comprising an ethanol with dissolved Kavalactones in it. In an embodiment, the solution may be further concentrated by way of evaporating ethanol. In an embodiment, any known method to concentrate the organic solution or evaporate the organic solution known to a person skilled in art can be employed to concentrate the solution. In an embodiment, ethanol is pulled or dried from the solution of ethanol rich in Kavalactones using vacuum filters. In an embodiment, the ethanol may be completely dried out from the solution leaving behind a waxy paste rich in Kavalactones. In an embodiment, the ethanol is not completely dried out from the solution, leaving find a concentrated solution rich in Kavalactones. As used herein, "concentration" is defined as a process to reduce the amount solvent such as ethanol in present case and increasing the amount of solute (Kavalactones) in the solution. In an embodiment, concentrated solution and/or waxy paste has about 5 to about 15% of ethanol

by volume of the solution. In an embodiment, concentrated solution and/or waxy paste has about 15 to about 30% of ethanol by volume of the solution. The kava extract of step 1 is not suspendable in water with ethanol percentage less than about 5% v/V or about 4% v/V or 2% v/V or 1% v/V or less. In an embodiment, the solution of ethanol rich in Kavalactones without concentrating step can be used directly for emulsifying Kavalactones using step 2.

[0282] The kava extract from step 1, undergoes step 2 for emulsifying Kavalactones such that emulsified Kavalactones remain suspended in water. In an embodiment, the ethanol may be added in the product of step 1 prior to processing of step 2 to form a soluble organic solution. In an embodiment, there is no addition of ethanol to the product of step 1 prior to processing of step 2. The soluble organic solution is rich in Kavalactones. The Kavalactones is emulsified using emulsifier. In an embodiment, the emulsifier is selected from polysorbate-80, lecithin, glycerin. The emulsifier used for emulsifying Kavalactones can be used individually or in any combination such as but not limited to glycerin with polysorbate, polysorbate with lecithin etc. In an embodiment, the mixture of all three said emulsifiers is used to emulsify Kavalactones. The emulsified Kavalactones is suspendable in water. In an embodiment, a kava extract extracted using any procedure any can be emulsified using the present invention. In an embodiment, the emulsified kava extract can be optionally homogenized.

[0283] In an embodiment, the emulsified kava extract can be used as a tincture, in a kava product, or kava mint.

[0284] In one embodiment, a technique for deactivating microbes of untreated Noble Kava juice or Noble Kava product using high-pressure processing (HPP) comprising the steps of: (i) heating of untreated Noble Kava juice or Noble Kava product to a pre-pressurized temperature, (ii) placing the Noble Kava juice or Noble Kava product in a pressure vessel, (iii) exposing the Noble Kava juice or Noble Kava product to a pressure at a pressurized temperature for a time period in the

existence of a transmitting pressure fluid, (iv) decreasing the pressure in the vessel after the period of time and (v) removal of HPP treated Noble Kava juice or Noble Kava product from the pressure vessel. The steps (iii) and (iv) mentioned above may be repeated at least once before step (v) is accomplished. The time period and pressure being modifiable between repetitions of steps (iii) and (iv) mentioned in the process. This embodiment may further comprise an extra step before step (ii) of exposing the Noble Kava juice or Noble Kava product to a preset amount of oxygen for a period of time. The Noble Kava juice or Noble Kava product is heated to a pre-pressurized temperature using preferably a preheated oven. The pre-pressurized temperature is preferably 90°C. The drying is continued in the preheated oven until the moisture content of the individual particles or granules are concentrated to 11 to 13 percent by weight. Preferably water is used as the transmitting pressure fluid in the pressure vessel. The pressure in the pressure vessel is preferably between 400 MPa to 1000 MPa, and preferably able to be increased or decreased incrementally. The pressurized temperature is preferably 238°C in this process. During the high-pressure processing (HPP), the pressure has an unvarying consequence on the total pre-packaged Noble Kava juice or Noble Kava product. The flexibility of the product container containing Noble Kava juice or Noble Kava product permits it to compensate for external pressure via a decrease in volume. Hence, flexible containers are desirable for high-pressure processing (HPP) of Noble Kava juice or Noble Kava product in the embodiment.

[0285] During the high-pressure processing (HPP), it is preferable to pre-pack the Noble Kava juice or Noble Kava product in a flexible container or pouch. Another variation of the HPP process would be to apply the HPP process to non-heated and even frozen product. (i.e., the ingredients do not necessarily need to be pre-heated).

[0286] In one embodiment, the HPP treated Noble Kava juice or Noble Kava product is checked for aerobic mesophilic plate count for the enumeration of bacteria in the embodiment. In another

embodiment, the HPP treated Noble Kava juice or Noble Kava product is checked for enumeration of yeasts and molds in the embodiment. In one embodiment, the result of aerobic mesophilic plate count for the enumeration of bacteria of HPP treated Noble Kava product is found to be about 8000 cfu/g for the HPP treated Noble Kava product measured at pressure of about 450 MPa. In another embodiment, the result of aerobic mesophilic plate count for the enumeration of bacteria of HPP treated Noble Kava product is found to be about 5500 cfu/g for the HPP treated Noble Kava product measured at pressure of about 600 MPa. In one embodiment, the enumeration of yeasts is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of about 450 MPa. In another embodiment, the enumeration of yeasts in this analysis is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of 600 MPa. In one embodiment, the enumeration of molds is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of 450 MPa. In another embodiment, the enumeration of molds is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of 600 MPa.

[0287] In one embodiment, a technique for deactivating infectious agents, like viruses and virus type agents, from fluids, like body fluids, such as blood plasma, is by using high temperature short time (HTST) of heat sensitive untreated Noble Kava juice or Noble Kava product is performed. In this HTST technique, speedy heating of the heat sensitive Noble Kava juice or Noble Kava product so as to effect heating, such as sterilization or pasteurization, without eradicating or markedly shifting the biological action, flavor or other necessary features of the heat sensitive Noble Kava juice or Noble Kava product. In this HTST technique, destroying of particular microorganisms in Noble Kava juice or Noble Kava product can be achieved. In one embodiment, Noble Kava juice is sterilized at a sterilization temperature of 134°C (274°F), or a pasteurization temperature at 65oC (149°F) to 134°C (274°F) by high temperature short time (HTST) method. In another embodiment, holding the heated Noble Kava juice at the temperature either sterilization or pasteurization for a

selected holding time period of about 0.1 seconds is performed to affect the destruction of the desired microorganisms in the embodiment. In one embodiment, heated Noble Kava juice is allowed to rapid cooling, below 65oC (149°F) such as 5°C (41°F) to 25°C (77°F) in the HTST technique. In one embodiment, HTST treatment of Noble Kava juice or Noble Kava product involves cooling the Noble Kava juice or Noble Kava product with or without flash cooling in the embodiment. In another embodiment, HTST treatment of Noble Kava juice or Noble Kava product in which the process considered can be with or without homogenization of the Noble Kava juice or Noble Kava product. In one embodiment, HTST treatment of Noble Kava juice or Noble Kava product can be with or without aseptic packaging. In another embodiment, HTST treatment of Noble Kava juice or Noble Kava product involves circulation of heat sensitive Noble Kava juice or Noble Kava product during the heating, cooling and holding time periods.

[0288] An embodiment additionally offers a technique of bringing a pulsed electric field (PEF) in an untreated Noble Kava juice or untreated Noble Kava product in liquified form for the deactivation of bacterial spores. The technique comprises the stages of pumping the untreated Noble Kava juice or untreated Noble Kava product in liquified form through a treating equipment so as to create a Noble Kava juice or Noble Kava liquid product movement in the treating equipment, creating a plurality of pulsed electric fields (PEFs), and bringing the plurality of pulsed electric fields in the Noble Kava juice or Noble Kava product in liquified form wherein the brought pulsed electric field (PEF) vector pathway is parallel to the movement of Noble Kava juice or Noble Kava product in liquified form. Moreover, the stage of creating a plurality of pulsed electric fields (PEFs) comprises the stage of creating a pulsed electric field (PEF) with a frequency range of 400 Hz to 20 kHz and an electric field range of 14 kV/cm to 160 kV/cm. Preferably 45 kV/cm field strength is employed for the treatment in the embodiment. The technique additionally comprises the stage of controlling the Noble Kava juice or Noble Kava product in liquified form

temperature in the range of 35°C to 40°C or below 40°C. Moreover, the stage of creating a pulsed electric field (PEF) comprises a stage of creating a pulsed electric field with a pulse length of 1 to 20 micro seconds. Preferably 3 micro seconds is employed for the treatment of Noble Kava juice or Noble Kava product in the embodiment. The pulsed electric field (PEF) procedure uses an electric field voltage applied across two electrodes where a Noble Kava juice or Noble Kava food product in liquified form exists between the electrodes. Because Noble Kava juice or Noble Kava liquified products are principally comprising of Noble Kavalactones, water and nutrients, a consistent electric field is brought in the Noble Kava juice or Noble Kava product in liquified form. A bactericidal effect, generally called the dielectric rupture (based on Dielectric Rupture Theory), arises due to this transported electric field in the Noble Kava juice or Noble Kava product in liquified form. From the Dielectric Rupture Theory, it can be observed that pulsed electric field (PEF) treatment decreases the activity of bacteria and other microorganisms by destroying the bacterial or microorganism cell structure in Noble Kava juice or Noble Kava food product in liquified form. The applied electric field brings an electric potential across the membrane of a living cell present in bacteria or microorganisms present in Noble Kava juice or Noble Kava product in liquified form. This would create an electrostatic partition of charges in the cell membrane of the bacteria and microorganisms of Noble Kava juice or Noble Kava product in liquified form. This leads to pore establishment in weak zones of the cell membrane of bacteria or microorganisms in Noble Kava juice or Noble Kava product in liquified form. The pore establishment and destroying of cell membrane have a fatal consequence on the bacteria or microorganisms in Noble Kava juice or Noble Kava product in liquified form. It is expected that processing of Noble Kava juice in this PEF treatment would decrease the microbes considerably and enhance the shelf life of Noble Kava juice. In one embodiment, 45 kV/cm field strength having a pulse duration of 3 micro seconds was applied to effect 4 positive and 4 negative pulses per

second of untreated Noble Kava juice. In another embodiment, this PEF treatment involves a total of 35 positive and 35 negative pulses. In one embodiment, the PEF treatment involves heating at 35°C to 40°C or below 40°C during the processing of Noble Kava juice. In another embodiment, the cold-water circulation was maintained to control the temperature of the heating process and water circulation in this example is performed at 10°C to 15°C in the embodiment.

[0289] Microwave radiation as a source of non-ionizing electromagnetic radiation has been used in non-ionization radiation sterilization technique to heat Noble Kava juice or Noble Kava product for destroying microbes to afford extended shelf life in the embodiment, thus permitting essential preparation of Noble Kava products for distribution. It is expected that this non-ionization treatment using microwave irradiation would reduce microbes reasonably and extend the shelf life of Noble Kava juice or Noble Kava product. In one of the embodiments, a technique may comprise providing a closed container which comprises a free-flowing Noble Kava juice or Noble Kava product inclined within this container. Also, this technique involves conveying the closed container through a non-ionizing electromagnetic radiation apparatus during a conveying time period. The technique comprises transmitting microwave radiation from the non-ionizing electromagnetic radiation apparatus to the free-flowing Noble Kava juice or Noble Kava product to achieve a sterilization temperature during a transmitting time period. During the non-ionizing radiation sterilization treatment of Noble Kava juice or Noble Kava product, at least a portion of the transmitting time period overlaps with at least a portion of the conveying time period. The technique comprises manipulating the closed container during a manipulating time period to achieve sterilization of the entirety of the Noble Kava juice or Noble Kava product within the closed container and the whole of interior surfaces of the closed container. Again, during this process at least a portion of the manipulating time period overlaps with at least a portion of the transmitting time period. In one embodiment, the technique may comprise providing a closed

container which comprises a free-flowing Noble Kava juice or Noble Kava product inclined within it. In another embodiment, the container comprises a base and the closed container is placed vertically upright on the container base, and the closed container is subjected to microwave radiation as the source of non-ionizing electromagnetic radiation adequate to attain sterilization temperature. In one embodiment, the technique may comprise exposing the closed container to an inversion sequence which comprises a first inversion of the container until the container base is located at an angle of up to about 180 degrees relative to vertical orientation. In another embodiment, the first inversion occurs over a time period of at least three seconds, and wherein the inversion sequence allows for sterilizing of interior surfaces of the container. In one of the embodiments, untreated Noble Kava juice is subjected to non-ionizing radiation sterilization treatment using microwave irradiation, after being placed in a bottle and the bottle capped. In another embodiment, the microwave irradiation was performed about 50 to 60 seconds and the raise in temperature of the come-up zone is about 78°C to 80°C of the system and the capped Noble Kava juice was maintained at a target temperature of about 78°C to 80°C for about 1 to 2 minutes. The bottle containing the Noble Kava juice or Noble Kava product were then allowed to cool at 25°C.

[0290] Irradiation by ionization radiation sterilization technique is used to reduce or eliminate the risk of food-borne illnesses, prevent or slow down spoilage, arrest maturation or sprouting and as a treatment against pests in the Noble Kava product. Depending on the dose, some or all of the pathogenic organisms, microorganisms, bacteria, and viruses present are destroyed, slowed down, or rendered incapable of reproduction. When targeting bacteria, most foods are irradiated to significantly reduce the number of active microbes, not to sterilize all microbes in the product. In this respect it is similar to pasteurization. Irradiation is used in this embodiment to create shelf-stable Noble Kava products. The radiation source supplies energetic particles or waves. As these

waves/particles pass through the target material they collide with other particles. Around the sites of these collisions chemical bonds are broken, creating short lived radicals (e.g. the hydroxyl radical, the hydrogen atom and solvated electrons). These radicals cause further chemical changes by bonding with and or stripping particles from nearby molecules. When collisions damage DNA or RNA, effective reproduction becomes unlikely, also when collisions occur in cells, cell division is often suppressed. For purposes of legislation doses are divided into low (up to 1 kGy), medium (1 kGy to 10 kGy), and high-dose applications (above 10 kGy). High-dose applications are above those currently permitted in the US for commercial food items by the FDA and other regulators around the world. Though these doses are approved for non-commercial applications, such as sterilizing frozen meat for NASA astronauts (doses of 44 kGy) and food for hospital patients.

[0291] Sterilization of Noble Kava juice or Noble Kava product by high energy ionizing radiation offers substantial capacity as a substitute to the conventional use of thermal energy for such fortitudes. It is expected that this ionization treatment would reduce considerably the microbes and improve the shelf life of Noble Kava juice. In radiation sterilization technique, sterilization is performed under cold condition in which the temperature of the Noble Kava juice or Noble Kava product is not augmented to any momentous degree. But thermal sterilization needs that the temperature of the Noble Kava juice or Noble Kava product be elevated to a level which will deactivate all microbes present or likely to be present and inherently results in a product which displays those features found in a desperately over-cooked item, such as, loss of texture, flavor, color, vitamins, etc. To be able to sterilize Noble Kava juice or Noble Kava products without adversely affecting the properties of such Noble Kava products, as inherently results from thermal sterilization, is presently the goal by using ionizing radiation. In order to stabilize Noble Kava juice or Noble Kava product for long term storage at feasible temperatures, it is necessary to deactivate or destroy the enzymes and microorganisms normally present in Noble Kava juices or

Noble Kava products. The process of enzyme deactivation is conventionally completed by raising the temperature of the Noble Kava juice or Noble Kava product until the enzyme proteins are denatured. The temperature required to deactivate enzymes is significantly below that required to deactivate some of the potentially harmful microorganisms present in the Noble Kava juice or Noble Kava product. When the Noble Kava juice or Noble Kava product is to be sterilized by ionizing radiation, such sterilization normally follows the thermal deactivation of the enzymes. The precooked radiation sterilized Noble Kava juice or Noble Kava product is produced by uniformly mixing at a temperature within the range of 145°F to 175°F. This temperature range is also adequate to deactivate enzymes present in Noble Kava juice or Noble Kava product. The cooked Noble Kava juice or Noble Kava product is inserted within a gas-tight container and closed in the absence of oxygen. After packaging, the Noble Kava juice or Noble Kava product is then exposed to a dose of high energy ionizing radiation sufficient to eradicate all potentially harmful microorganisms that may be present. Irradiation of the Noble Kava juice or Noble Kava product designated in this technique was done by exposing the Noble Kava juice or Noble Kava product to γ-radiation emitted from a 900,000 curie Cobalt 60 source. The physical arrangement of the electromagnetic radiation source comprised of a pair of spaced apart parallel plaques which contained the radio isotope Co-60. The Noble Kava juice or Noble Kava product to be treated are positioned within stacked aluminum canisters and carried by conveyor between the plaques for a period of time essential to reach the anticipated dosage level. In one embodiment, without precooking, the untreated Noble Kava juice or Noble Kava product after packaging is exposed to high energy ionizing radiation to destroy all potentially harmful microorganisms that may be present. In one embodiment untreated Noble Kava juice or Noble Kava product is canned and irradiated with γ-rays from Co-60 source at -30°C to -40°C and received a dose in the range of 3.5-6.5 megarads followed by cooling to room temperature of 25°C.The enhanced Noble Kava extract

produces a state of calmness, relaxation and well-being without diminishing cognitive performance or negative side effects. The disclosed composition of the present invention comprises an enhanced Noble Kava extract which is derived from Noble Kava plants or *Piper methysticum*.

[0292] Owing to their ability to provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation, the Cannabis has been used for both medical use and recreation. In one embodiment of the embodiments of the invention, Thus based on their ability to provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation, the Cannabis containing compositions of the embodiments herein could be used for both medical use and recreational use; these compositions could be used to treat chronic pain and muscle spasm for medical use but have common side effects include but not limited to dizziness, feeling tired, vomiting, anxiety, agitated, restlessness and hallucinations. These side effects are undesirable and uncomfortable for person consuming Cannabis containing compositions. These side effects are also physically debilitating and hinders person capacity to function normally.

[0293] In one embodiment, the disclosed composition according of the present invention comprises an enhanced Noble Kava extract that is more effective in diminishing the common negative side effects cannabis or hemp extract or poppy by serving as a relaxant, providing relief from anxiety, providing relief from nausea, providing calming benefits, producing a state of calmness, relaxation and well-being without diminishing cognitive performance. In another embodiment, the disclosed composition according of the present invention comprises an enhanced Noble Kava extract that diminishes the common negative side effects cannabis or hemp extract or poppy by serving as a relaxant, providing relief from nausea, providing relief from anxiety, providing calming benefits, producing a state of calmness, relaxation and well-being without diminishing cognitive performance. In another embodiment, the disclosed composition according

of the present invention comprises an enhanced Noble Kava extract that suppresses the common negative side effects cannabis or hemp extract or poppy by serving as a relaxant, providing relief from anxiety, providing relief from nausea, providing calming benefits, producing a state of calmness, relaxation and well-being without diminishing cognitive performance. In another embodiment, the disclosed composition according of the present invention comprises an enhanced Noble Kava extract that relieves the common negative side effects cannabis or hemp extract or poppy by serving as a relaxant, providing relief from anxiety, providing relief from nausea, providing calming benefits, producing a state of calmness, relaxation and well-being without diminishing cognitive performance.

[0294] In this present invention, to diminish, relieve and /or suppress the undesired side effects of cannabis containing compositions which can be served for human consumption in solid forms, powder form, paste, liquid forms, other edible form or drinkable form, enhanced Noble Kava extract is added or incorporated into the compositions of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising cannabis containing compositions that are consumed for both medical use and recreational use. In another embodiment of this present invention, to relieve the undesired side effects of cannabis component which can be served for human consumption in solid forms, powder form, paste, liquid forms, other edible form or drinkable form, enhanced Noble Kava extract is added or incorporated into the compositions of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising hemp extract containing compositions of the embodiments that are consumed for both medical use and recreational use. In another embodiment of this present invention, to relieve the undesired side effects of cannabis component which can be served for human consumption in solid forms, powder form, paste, liquid form, other edible form or drinkable

form, enhanced Noble Kava extract is added or incorporated into the compositions of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising poppy containing compositions of the embodiments that are consumed for both medical use and recreational use. The enhanced Noble Kava extract serves as a relaxant, provide relief from anxiety, provide calming benefits, provide relief from nausea provide relief from nausea and produces a state of calmness, relaxation and well-being by diminishing the common negative side effects cannabis or hemp extract or poppy.

[0295] In one embodiment, the enhanced Noble Kava extract is obtained or derived from selected parts of the Noble Kava plants that include stems, roots, and rhizomes. In another embodiment, the enhanced Noble Kava extract is obtained or derived from selected parts of the Noble Kava plants that include fresh and dried roots, fresh and dried rhizomes, peeled, fresh and dried rhizomes, and basal stems.

[0296] In another embodiment, the enhanced Noble Kava extract is obtained or derived mainly from the roots of the Noble Kava plant, but the source of the enhanced Noble Kava extract is not restricted only from the roots and can also be harvested from other parts of the Noble Kava plants. In another embodiment, enhanced Noble Kava extract is obtained or derived from or prepared using lower part of the basal stem. rhizomes and/or roots to make fresh Noble Kava comprising compositions. In another embodiment, enhanced Noble Kava extract is obtained or derived from or prepared using lower part of the basal stem, rhizomes and/or roots to make fresh Noble Kava comprising compositions including beverages, aerated beverages, candies, and confectionaries. In another embodiment, enhanced Noble Kava extract is obtained or derived from or prepared using of intact roots, rhizomes, chips or powdered forms to make dried Noble Kava comprising compositions. In another embodiment, dried Noble Kava comprising compositions may be in the form of intact roots, rhizomes, chips or powdered forms

[0297] All part of Noble Kava plants contain water, starch, dietary fibers, sugar, proteins, minerals and Kavalactones. Noble Kava plants contain water, different types of starches, different types of dietary fibers, different types of sugar, different types of proteins, different types of minerals and Kavalactones. The Noble Kava plants are harvested after they have matured in order for them to contain higher amounts of Kavalactone or high Kavalactone content. Kavalactones provide the pharmacological activities that allows the enhanced Noble Kava extract to produce or induce a state of calmness, relaxation and well-being without diminishing cognitive performance or causing negative side effects.

[0298] The Noble Kava plants used as a source for enhanced Noble Kava extract for the embodiments of the invention are selected from Noble Kava plants that has a history of safe use and contain Kavalactone compositions that produce a state of calmness, relaxation and well-being without diminishing cognitive performance or causing other negative side-effects. These Noble Kava plants that are used as a source for enhanced Noble Kava extract for the embodiments of the invention have a history of safe use and provide the user with an experience of calmness, relaxation and well-being without diminishing cognitive performance or causing other negative side-effects are termed as Noble Kava.

[0299] Suitable Noble Kava plants for enhanced Noble Kava extract for the embodiments of the invention and identified according to the vernacular terms, are sourced from and include:

[0300] Federated States of Micronesia: Rahmwahnger;

[0301] Fiji: Damu. Dokobana loa, Dokobana vula, Honolulu, Loa kasa balavu. Loa kasa leka, Matakaro balavu, Matakaro leka, Qila balavu, Qila leka, Vula kasa balavu, Vula kasa leka, Yalu;

[0302] Hawaii: Hanakapi'ai, Hiwa, Honokane Ikl, Kumakua, Mahakea, Mapulehu, Moi, Nene, Opihikao, Pana'ewa, Papa 'Ele ele, Papa 'Ele ele Pu upu u, Papa kea; NOTE: all traditional Hawaii varieties are good for drinking, only two foreign varieties Isa and lwa grown are Tudei type.

[0303] Papua New Guinea (from Baluan Island): Kau kupwe;

[0304] Samoa: Ava La'au, Ava Lea, Ava Loa, Ava Tonga:

[0305] Solomon Islands: Melomelo;

[0306] Tonga: Noble Kava Fulufulu, Noble Kava Kula. Noble Kava Tea, Lekahina, Lekahina 'akau, Lekaku/a, Lekakula 'akau;

[0307] Vanuatu: Ahouia, Amon, Asiyai, Bir Kar, Bir Sul, Biyaj, Borogoru, Borogu, Ge gusug, Ge vemea, Ge wiswisket, Ke/al, Leay, Me/me/, Melomelo, Mie/a, Naga mfwok, O/itao. Palarasul. Palasa, Palimet, Pia, Poivota, Pua/iu, Puariki, Sese, Silese, Urukara.Generally, the roots, rhizomes and/or lower part of the basal stem of the harvested mature Noble Kava plants contain higher amounts of Kavalactone or high Kavalactone content and are the preferred part of the plant that is used as a source for making enhanced Noble Kava extract for the purpose of the embodiments of the invention. In one embodiment of the present invention, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain higher concentration of Kavalactone content in the enhanced Noble Kava extract. In another embodiment of the present invention, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain higher amounts of Kavalactone content. In another embodiment of the present invention, the Noble Kava plants are harvested after they have matured so they can be used as a source to obtain more favorable compositional mix of Kavalactone in the enhanced Noble Kava extract. In one embodiment, enhanced Noble Kava extract disclosed in the present invention, the Noble Kava plants are usually harvested after a minimum time of 2 years so they can be used as a source to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone content or favorable compositional mix of Kavalactone in the enhanced Noble Kava extract. In another embodiment, enhanced Noble Kava extract disclosed in the present invention, the Noble Kava plants are usually harvested after a minimum time of 3 years, so they can be used as a source

to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone content or more favorable compositional mix of Kavalactone in the enhanced Noble Kava extract. Preferably a minimum of 3 to 4 years or 5 years is desired before the plants are harvested so they can be used as a source to obtain higher amounts of Kavalactone content or higher concentration of Kavalactone content or favorable compositional mix of Kavalactone in the enhanced Noble Kava extract.

[0308] In one embodiment, Kavalactones are main source or the principal ingredients for serving as a relaxant, providing relief from anxiety, providing calming benefits, providing relief from nausea producing a state of calmness, relaxation and well-being without diminishing cognitive performance. There are different types of Kavalactones present in the Noble Kava plant. Six of these Kavalactones make up greater than 90 wt.% and in some cases 95 wt.% of the total Kavalactones pharmacological activity. The six major Kavalactones are Kavain (K), Dihydrokavain (DHK), methysticin (M), dihydromethysticin (DHM), yangonin (Y), and demethoxyyangonin (DMY).

[0309] In one embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the quality of the enhanced Noble Kava extract. In another embodiment, the ability to serve as a relaxant is dependent on the quality of the enhanced Noble Kava extract. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the quality of the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from anxiety is dependent on the quality of the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from nausea is dependent on the quality of the enhanced Noble Kava extract.

[0310] In one embodiment, the quality of the enhanced Noble Kava extract is related to the higher amounts of Kavalactone content, higher concentration of Kavalactone content, favorable compositional mix of Kavalactone. In another embodiment, the quality of the enhanced Noble

Kava extract is related to the higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0311] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for having higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for having higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0312] In another embodiment, the enhanced Noble Kava extract comprises higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones. In another embodiment, the enhanced Noble Kava extract comprises higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0313] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the six major Kavalactones.

[0314] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the Kavalactones with higher pharmacological activity. In another

embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the six major Kavalactones.

[0315] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the six major Kavalactones.

[0316] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 50% of the total Kavalactones being the six major Kavalactones.

[0317] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 60% of the total Kavalactones being the six major Kavalactones.

[0318] In one embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract is considered to be enhanced for consisting of at least 70% of the total Kavalactones being the six major Kavalactones.

[0319] In one embodiment, the enhanced Noble Kava extract comprises at least 50% of the Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the six major Kavalactones

[0320] In one embodiment, the enhanced Noble Kava extract comprises at least 60% of the Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the six major Kavalactones

[0321] In one embodiment, the enhanced Noble Kava extract comprises at least 50% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 50% of the total Kavalactones being the six major Kavalactones.

[0322] In one embodiment, the enhanced Noble Kava extract comprises at least 60% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 60% of the total Kavalactones being the six major Kavalactones.

[0323] In one embodiment, the enhanced Noble Kava extract comprises at least 70% of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 70 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the enhanced

Noble Kava extract comprises at least 70% of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the enhanced Noble Kava extract comprises at least 70 % of the total Kavalactones being the six major Kavalactones.

[0324] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to serve as a relaxant is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from anxiety is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from nausea is dependent on the concentration of the six major Kavalactones in the enhanced Noble Kava extract.

[0325] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to serve as a relaxant is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from anxiety is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In

another embodiment, the ability to provide relief from nausea is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract.

[0326] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to serve as a relaxant is dependent on the amounts of six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from anxiety is dependent on the favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract. In another embodiment, the ability to provide relief from nausea is dependent on the favorable compositional mix of the six major Kavalactones in the enhanced Noble Kava extract.

[0327] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being Kavalactones with

higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity.

[0328] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity.

[0329] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total

Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity.

[0330] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide relief from anxiety is dependent on

the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 50 % of the total Kavalactones being the six major Kavalactones.

[0331] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being Kavalactones with higher pharmacological activity.

[0332] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced

Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 60% of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity.

[0333] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least

60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity.

[0334] In one embodiment, the effectiveness to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to produce a state of calmness, relaxation and well-being is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to serve as a relaxant is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide calming benefits of Noble Kava is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide relief from anxiety is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones. In another embodiment, the ability to provide relief from nausea is dependent on the enhanced Noble Kava extract comprising at least 60 % of the total Kavalactones being the six major Kavalactones.

[0335] The amount and / or concentration of the Kavalactones can be measured by various analytical techniques such as HPLC.

[0336] The enhanced Noble Kava extract from the Noble Kava plant is obtained by extraction processes using extraction media or solvents that increase the amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a favorable mix of the

six major Kavalactones in the enhanced Noble Kava extract and / or provides a composition with at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, enhanced Noble Kava extract from the a roots, rhizomes and lower part of the basal stem are obtained by extraction processes using extraction media or solvents that increase the amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a favorable mix of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a composition with at least 50 % of the total Kavalactones being the six major Kavalactones.

[0337] The enhanced Noble Kava extract from the Noble Kava plant is obtained by one or more extraction processes using one of more extraction media or solvents that increase the amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a favorable mix of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a composition with at least 50 % of the total Kavalactones being the six major Kavalactones. In another embodiment, enhanced Noble Kava extract from the a roots, rhizomes and lower part of the basal stem are obtained by one of more extraction processes using one of more extraction media or solvents that increase the amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a favorable mix of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a composition with at least 50 % of the total Kavalactones being the six major Kavalactones.

[0338] In one embodiment, the extraction process removes dirt, components of soil, inorganic components of soil, low molecular weight components, other minor constituents and at least some of the Kavalactones that do not belong to the six major Kavalactones from the Noble Kava plant

part being extracted. In another embodiment, the extraction process removes dirt, components of soil, inorganic components of soil, low molecular weight components, other minor constituents and substantial amounts of the Kavalactones that do not belong to the six major Kavalactones from the Noble Kava plant part being extracted. Solvent purification dissolves or leaches away dirt, inorganic components of soil, low molecular weight components, minor constituents and at least some of the Kavalactones that do not belong to the six major Kavalactones from the Noble Kava plant part being extracted. Solvent purification using liquid, high pressure gas or supercritical fluid dissolves or leaches away dirt, inorganic components of soil, low molecular weight components, minor constituents and at least some of the Kavalactone that do not belong to the six major Kavalactones from the Noble Kava plant part being extracted.

[0339] In one embodiment, the ratio of the amounts of major Kavalactones to total Kavalactones in the enhanced kava extract is greater than the ratio of the amounts of major Kavalactones to total Kavalactones in the selected part of a kava plant; wherein the major Kavalactones consists of kavain, Dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin and the non-major Kavalactones are Kavalactones other than the major Kavalactones.

[0340] In one embodiment, the ratio of the amounts of non-major Kavalactones to total Kavalactones in the enhanced kava extract is less than the value derived from the ratio of the amounts of non-major Kavalactones to total Kavalactones in the selected part of a kava plant.

[0341] In one embodiment, the enhanced kava extract is not altering the concentration profile of the six major Kavalactones to that present in the starting material. In an embodiment, the enhanced kava extract is enhancing the concentration of the six major Kavalactones by removing non major Kavalactones.

[0342] In one embodiment, the enhanced kava extract is obtained without CO2as an extraction medium.

[0343] In one embodiment, the enhanced kava extract is in paste form.

[0344] In one embodiment, the enhanced kava extract is in form other than in a paste, such as it is in a liquid form.

[0345] In one embodiment, the enhanced kava extract is not in paste form.

[0346] In an embodiment, CO2 extraction process for kava, leads to a very waxy paste that is very difficult to work with. This was one of our greatest feats to overcome with years of research required, on how to actually develop end user products such as a beverage, an aerated beverage, a candy and chewable gummy candy, a confectioner, an effervescent powder or table or a dietary supplement.

[0347] In an embodiment, the product is combination of CBD with CO2 extracted kava.

[0348] In an embodiment, the product is combination of THC with CO2 extracted kava.

[0349] In an embodiment, the product is combination of hemp extract with CO2 extracted kava.

[0350] In an embodiment, the product is combination of CBD with ethanol extracted kava.

[0351] In an embodiment, the product is combination of THC with ethanol extracted kava.

[0352] In an embodiment, the product is combination of hemp extract with ethanol extracted kava.

[0353] In an embodiment, the product is combination of CBD with CO2 and ethanolic extracted kava.

[0354] In an embodiment, the product is combination of THC with CO2and ethanolic extracted kava.

[0355] In an embodiment, the product is combination of hemp extract with CO2and ethanolic extracted kava.

[0356] In an embodiment, the product does not include milk thistle and yerba mate extract.

[0357] In one embodiment, the selection of the extraction media and the selection of extraction process employed to obtain the enhanced Noble Kava extract determines the quality of the

enhanced Noble Kava extract. In another embodiment, the selection of the extraction media and the extraction process employed to obtain the enhanced Noble Kava extract determines the yield of the enhanced Noble Kava extract that is obtained or produced from the original Noble Kava plant parts that are being extracted from the Noble Kava plant part being extracted.

[0358] In another embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having higher amounts of Kavalactone content and/or higher concentration of Kavalactone content and/or favorable compositional mix of Kavalactones. In another embodiment, of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having higher amounts of six major Kavalactone content and / or higher concentration of six major Kavalactone content and / or favorable compositional mix of six major Kavalactones.

[0359] In one embodiment of the present invention, the enhanced Noble Kava extract obtained after extraction processes using extraction media comprises higher amounts of Kavalactone content and / or higher concentration of Kavalactone content and / or favorable compositional mix of Kavalactones. In another embodiment of the present invention, the enhanced Noble Kava extract obtained after extraction processes using extraction media comprises higher amounts of six major Kavalactone content and / or higher concentration of six major Kavalactone content and / or favorable compositional mix of six major Kavalactones.

[0360] In another embodiment, of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In another embodiment, of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having at least 50 % of the total

Kavalactones being the more active Kavalactones with higher pharmacological activity. In another embodiment, of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In another embodiment, of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having at least 50 % of the total Kavalactones being of the six major Kavalactones.

[0361] In accordance to one embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will comprise higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, or favorable compositional mix of six major Kavalactones. In accordance to another embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will contain higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, or favorable compositional mix of six major Kavalactones.

[0362] In accordance to another embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will comprise at least 50 % of the total Kavalactones being Kavalactones with higher pharmacological activity. In accordance to another embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will comprise at least 50 % of the total Kavalactones being the more active Kavalactones with higher pharmacological activity. In accordance to another embodiment of the

present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will comprise at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. In accordance to another embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is obtained in the form of powder, paste or liquid forms of enhanced Noble Kava extract and will comprise at least 50 % of the total Kavalactones being the six major Kavalactones.

[0363] In accordance to one embodiment, the powder, paste or liquid forms of enhanced Noble Kava extract is more effective in their ability to produce a state of calmness, relaxation and well-being, more effective in their ability to serve as a relaxant, more effective in their ability to provide calming benefits, more effective in their ability to provide relief from anxiety and more effective in their ability to provide relief from nausea. In accordance to another embodiment, the powder, paste or liquid forms of enhanced Noble Kava extract is made by the extraction processes using variety of extraction media or solvents. In accordance to another embodiment, the powder, paste or liquid forms of enhanced Noble Kava extract is obtained from the extraction processes using variety of extraction media or solvents. In accordance to another embodiment, the powder, paste or liquid forms of enhanced Noble Kava extract comprises higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones. In accordance to another embodiment, the powder, paste or liquid forms of enhanced Noble Kava extract contains higher amounts of Kavalactone, higher concentration of Kavalactone content, and favorable compositional mix of six major Kavalactones.

[0364] In one embodiment, the powder, paste and liquid forms of enhanced Noble Kava extract are more effective in their ability to produce a state of calmness, relaxation and well-being when it is one of the ingredients of beverages, aerated beverages, candies, hard and chewable gummy

candies, confectionaries, and effervescent powder or tablet and dietary supplement that comprises at least one additional component of cannabis. In another embodiment, the powder, paste and liquid forms of enhanced Noble Kava extract are more effective in their ability to serve as a relaxant when it is one of the ingredients of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement that comprises at least one additional component of cannabis. In another embodiment, the powder, paste and liquid forms of enhanced Noble Kava extract are more effective in their ability to provide calming benefits when it is one of the ingredients of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement that comprises at least one additional component of cannabis. In another embodiment, the powder, paste and liquid forms of enhanced Noble Kava extract are more effective in their ability to provide relief from anxiety when it is one of the ingredients of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement that comprises at least one additional component of cannabis. In another embodiment, the powder, paste and liquid forms of enhanced Noble Kava extract are more effective in their ability to provide relief from nausea when it is one of the ingredients of beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement that comprises at least one additional component of cannabis.

[0365] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable

gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract.

[0366] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract serving as a relaxant. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis with the enhanced Noble Kava extract serving as a relaxant. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract with the enhanced Noble Kava extract serving as a relaxant.

[0367] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing calming benefits. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries,

and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis with the enhanced Noble Kava extract providing calming benefits. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract with the enhanced Noble Kava extract providing calming benefits.

[0368] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing relief from anxiety. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis with the enhanced Noble Kava extract providing relief from anxiety. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract with the enhanced Noble Kava extract providing relief from anxiety.

[0369] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract

producing a state of calmness, relaxation and well-being. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis with the enhanced Noble Kava extract producing a state of calmness, relaxation and well-being. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract with the enhanced Noble Kava extract producing a state of calmness, relaxation and well-being.

[0370] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract with the enhanced Noble Kava extract providing relief from nausea. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis with enhanced Noble Kava extract providing relief from nausea. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of hemp extract with enhanced Noble Kava extract providing relief from nausea.

[0371] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as poppy. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis such as poppy with the enhanced Noble Kava extract serving as a relaxant. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis such as poppy with the enhanced Noble Kava extract providing calming benefits. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis such as poppy with the enhanced Noble Kava extract providing relief from anxiety. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis such as poppy with the enhanced Noble Kava extract producing a state of calmness, relaxation and well-being. In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a such as poppy with enhanced Noble Kava extract providing relief from nausea.

[0372] Cannabis plants produce a group of chemicals called cannabinoids, which produce mental and physical effects when consumed. Cannabis plants produce a group of chemicals that can be considered to be psychoactive components. In other words, cannabinoids can produce mental and physical effects when consumed. Both tetrahydrocannabinol (THC) and cannabidiol (CBD are cannabinoids. In one embodiment, CBD-rich cannabis is less psychoactive than THC rich cannabis. In another embodiment, both tetrahydrocannabinol (THC) and / or cannabidiol (CBD) provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation. In another embodiment, both tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation. Owing to its ability to provide relief to an array of symptoms including pain, nausea, seizures, spasms and inflammation, the tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions of the embodiments herein could be used for both medical use and recreational use; they could be used to treat chronic pain and muscle spasm for medical use. However, tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions also produce common side effects include dizziness, feeling tired, vomiting, anxiety, agitated, restlessness and hallucinations. These side effects are undesirable and uncomfortable for person consuming tetrahydrocannabinol (THC) containing compositions and / or cannabidiol (CBD) containing compositions. These side effects are also physically debilitating and hinders person capacity to function normally.

[0373] Both cannabidiol (CBD) and tetrahydrocannabinol (THC) are obtained from various sources including but not limited to hemp, hemp stalk, hemp stem, hemp seed, cannabis, cannabis stalk, cannabis stem, cannabis seed, cannabis flower, poppy, poppy seed.

[0374] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC).

[0375] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component serving as a relaxant.

[0376] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component providing calming benefits.

[0377] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component providing relief from anxiety.

[0378] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component producing a state of calmness, relaxation and well-being.

[0379] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as tetrahydrocannabinol (THC) with the Noble Kava component to provide relief from nausea.

[0380] In one embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD).

[0381] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component serving as a relaxant.

[0382] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component providing calming benefits.

[0383] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component providing relief from anxiety.

[0384] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component producing a state of calmness, relaxation and well-being.

[0385] In another embodiment, the present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis comprising chemical compound such as cannabidiol (CBD) with the Noble Kava component to provide relief from nausea.

[0386] In one embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of tetrahydrocannabinol (THC). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract in the form of powder, paste or liquid forms and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of tetrahydrocannabinol (THC). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract with higher concentration of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of tetrahydrocannabinol (THC). In another embodiment,

beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract with higher amounts of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of tetrahydrocannabinol (THC). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract with favorable compositional mix of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of tetrahydrocannabinol (THC). The ratios of Noble Kava and / or enhanced Noble Kava extract to THC in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement provide relief from anxiety, lowers a sense of panic, serve as a relaxant, to provide calming benefits, to produce a state of calmness, relaxation and well-being and provide relief from nausea.

[0387] In one embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of cannabidiol (CBD). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract in the form of powder, paste or liquid forms and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of cannabidiol (CBD). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent

powder or tablet and dietary supplement comprises enhanced Noble Kava extract with higher concentration of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of cannabidiol (CBD). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract with higher amounts of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of cannabidiol (CBD). In another embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises enhanced Noble Kava extract with favorable compositional mix of the six major Kavalactones and at least one additional component of cannabis or hemp extract in the ratio of 5 mg to 950 mg of enhanced Noble Kava extract and 1 mg to 900 mg of cannabidiol (CBD). The ratios of enhanced Noble Kava extract to CBD in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement provide relief from anxiety, lowers a sense of panic, serve as a relaxant, to provide calming benefits, to produce a state of calmness, relaxation and well-being and provide relief from nausea.

[0388] In one embodiment, the composition for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one cannabis component. In one embodiment, the composition for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement contains enhanced Noble Kava extract and at least one cannabis component. The composition will

also optionally contain one or more from the list including but not limited to concentrated fruit juice, fruit juice, Theanine, Magnesium, Vitamins, Vitamin B, lime, lemon and milk thistle.

[0389] In one embodiment, composition for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement contains enhanced Noble Kava extract and at least one additional cannabis containing component. The formulation will also optionally contain one or more ingredients from the list including but not limited to concentrated fruit juice, fruit juice, Theanine, Magnesium, Vitamins, Vitamin B, lime, lemon and milk thistle.

[0390] In one embodiment, the composition for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional of cannabis containing component. The formulation will also optionally contain one or more ingredients from the list including but not limited to different types of sugar, sugar substitute, sugar free substitute, corn syrup, high fructose corn syrup, lime, lemon, citrus fruits, citrus fruit juices, rice syrup, alcoholic beverages, gelatin, malt, sodium salt, potassium salt, food color, food flavor, natural flavors, preservatives, extracts and slices from nuts such as almond, hazelnut, cashew nuts and pistachios. In another embodiment, formulation for the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement containing enhanced Noble Kava extract and at least one cannabis containing component. The composition will also optionally contain one or more ingredients from the list including but not limited to different types of sugar, sugar substitute, sugar free substitute, corn syrup, lime, lemon, citrus fruits, citrus fruit juices high fructose corn syrup, alcoholic beverages, rice syrup, gelatin, malt, sodium salt, potassium salt, food color, food flavor, natural flavors, preservatives, extracts and slices from nuts such as almond, hazelnut, cashew nuts and pistachios.

[0391] In one embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement will contain a mixture juice concentrate, flavored juice concentrate, supplement dry mix optionally containing Theanine and Vitamin B, supplement liquid mix containing enhanced Noble Kava extract and poppy and optionally lemon. In another embodiment, the mixture contains from about 2.5 to about 3.0 gallons of juice concentrate, from about 0.8 to about 1.2 gallons of flavored juice concentrate, from about 120 grams to about 140 grams of supplement dry mix and from about 4000 to about 5000 grams of supplement liquid mix or in the same ratios of the components. In another embodiment, the mixture contains from about 2.0 to about 4.0 gallons of juice concentrate, from about 0.5 to about 1.5 gallons of flavored juice concentrate, from about 100 grams to about 160 grams of supplement dry mix and from about 3000 to about 6000 grams supplement liquid mix or in the same ratios of the components.

[0392] In one embodiment, beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement will contain a mixture juice concentrate, flavored juice concentrate, supplement dry mix optionally containing Theanine and Vitamin B, enhanced Noble Kava extract and supplement liquid mix containing enhanced Noble Kava extract and poppy and optionally lemon. In another embodiment, the mixture contains from about 10 to about 60 gallons of juice concentrate, from about 5 to about 40 gallons of flavored juice concentrate, from about 2000 grams to about 4000 grams of supplement dry mix, from about 3 to about 20 gallons of supplement liquid mix and 1000 to 3000 enhanced Noble Kava extracts or in the same ratios of the components. In another embodiment, the mixture contains from about 15 to about 55 gallons of juice concentrate, from about 10 to about 35 gallons of flavored juice concentrate, from about 1000 grams to about 3000 grams of supplement dry mix, from about 5 to about 15 gallons of supplement liquid mix and 1500 to 2500 enhanced Noble Kava

extract or in the same ratios of the components. All the compositions to form beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprises powder, paste and liquid forms of enhanced Noble Kava extract formed after extraction of the Noble Kava roots or other part of the plant.

[0393] In one embodiment, the invention provides a process for preparing the beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis component. The beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and a cannabis component are made by following some of the steps from the list of possible processing steps. The process comprises a list of processing steps as described below:

Noble Kava roots are obtained and ground;

extraction of the Noble Kava roots or other part of the plant to obtain enhanced Noble Kava extract using liquid extraction media (alcohols, mixtures of alcohols, supercritical CO2(sCO2), or mixtures of alcohols and sCO2) and an extraction process (distillation, leaching, etc.);

post extraction recovery and/or concentration of the enhanced Noble Kava extract following extraction of the Noble Kava roots or other part of the plant;

filtering the post extraction recovery and/or concentration product that has undergone extraction to remove particulates, solids, components of soil and / or inorganic components of soil;

optionally, selectively removing the moisture or selectively drying the filtered post extraction recovered;

optionally, selectively drying the product that has undergone extraction and filtering leading to the formation of powder, paste and liquid forms of enhanced Noble Kava extract;

optionally, mixing the enhanced Noble Kava extract with at least one cannabis component and optionally with other ingredients such as milk thistle, Magnesium, Theanine vitamins, sugars, flavors and colors to make a first liquid mixture and then adding juice and / or juice concentrate to the first liquid mixture to make a second liquid mixture and mix thoroughly;

optionally, first mixing the enhanced Noble Kava extract and / or the supplement liquid mix containing enhanced Noble Kava extract and poppy and optionally lemon, adding the supplement dry mix optionally containing Theanine and Vitamin B and mixing until all the components are dispersed; adding the juice, juice concentrate to the dispersed mix and thoroughly mixing all the components using continuous mixing process;

optionally, for beverage fill bottles while continuously mixing thoroughly;

optionally, for candies, hard and chewable gummy candies and confectionaries, converts the liquid mixtures into different end products by removing the moisture or drying the mixture.

[0394] In one embodiment, the Noble Kava plants are extracted from the Noble Kava roots or other part of the plants using an extraction process and extraction medium. In another embodiment, enhanced Noble Kava extract from the Noble Kava roots or other parts of the plant is obtained by a variety of extraction processes using variety of extraction media or solvents that increase the amount of the six major Kavalactones in the enhanced Noble Kava extract and / or increases the concentration of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a favorable mix of the six major Kavalactones in the enhanced Noble Kava extract and / or provides a composition with at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity . In one embodiment of the present invention, the enhanced Noble Kava extract after extraction processes using extraction media is considered to be enhanced for having higher amounts of Kavalactone content and / or higher concentration of Kavalactone content and / or favorable compositional mix of six major Kavalactones and / or provides a

composition with at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity. The extraction process removes the impurities such as dirt, components of soil, inorganic components of soil, low molecular weight components, other minor constituents and at least some of the non-major six Kavalactones that do not belong to the six major Kavalactones. Exemplary extraction processes include but not limited to solvent purification, solvent extraction, distillation, cold distillation, high pressure gas, supercritical fluid extraction and combinations thereof. The product of the extraction process can be in the form of powder, paste and liquid forms of enhanced Noble Kava extract.

[0395] In one embodiment, the extraction process comprises a combination of one extraction steps and one extracting media. In another embodiment, the extraction process comprises a combination of at least one extraction steps and at least one extracting media. In another embodiment, the extraction process comprises a combination of multiple extraction steps and multiple extracting media. In another embodiment, the extraction process comprises a combination of multiple extraction steps, multiple extracting media including but not limited to glycerin, glycerin -water, alcohol, alcohol-water mixture, and alcohol - glycerin mixture, acetate and mixtures thereof.

[0396] In one embodiment, the extraction process consists or contains a combination of one extraction steps and one extracting media. In another embodiment, the extraction process consists or contains a combination of at least one extraction steps and at least one extracting media. In another embodiment, the extraction process consists or contains a combination of multiple extraction steps and multiple extracting media. In another embodiment, the extraction process consists or contains a combination of multiple extraction steps, multiple extracting media including but not limited to glycerin, glycerin -water, alcohol, alcohol-water mixture, and alcohol - glycerin mixture, acetate and mixtures thereof.

[0397] The extraction media can be a liquid such as but not limited to alcohols, mixtures of alcohols, mixture of alcohols and water, glycerin, mixture of glycerin and water acetone, acetate or combinations thereof. The efficacy of the extraction process will depend on the boiling point of the extraction media, the concentrations of the initial Noble Kava content in the extraction media in the extraction media, the concentrations of the initial Noble Kava plant content in the extraction media, ratio of Noble Kava pant content to extraction media, temperature, the agitation time which is the mixing time of the Noble Kava with the liquid extraction media, the mixing intensity or the mixing speed of the agitation process and the various filtration techniques.

[0398] In one embodiment, the extraction process comprises an extracting media including but not limited to alcohols, mixtures of alcohols, mixture of alcohols and water, mixture of alcohols and glycerin acetone or combinations thereof. In another embodiment. In one embodiment, the extraction process comprises an extracting media including but not limited to alcohols such as ethyl alcohol, ethanol, methyl alcohol, propyl alcohol, isopropyl alcohol, butyl alcohol or combinations thereof. In one embodiment, the extraction process comprises ethyl alcohol or ethanol. In another embodiment, the extraction process comprises an extracting media comprises glycerin or glycerin-water. In another embodiment, the extraction process comprises an extracting media comprises acetate. In another embodiment, the extraction process comprises an extracting media comprises acetone.

[0399] In one embodiment, the extracting media comprises of Glycerin and Glycerin / water mixture. In another embodiment, the extracting media comprises of alcohol / water mixture in the ratio of 20/80, 30/70, 40/60, 50/50, 60/40, 75/25, 80/20. In another embodiment, the extracting media comprises alcohol - glycerin mixture in the ratio of 20/80, 30/70, 40/60, 50/50. In another embodiment, the extracting media comprises different alcohols.

[0400] In one embodiment, the extraction can be carried out in the temperature range of 60 to 180 °F. In one embodiment, the extraction can be carried out in the temperature range of 70 to 160 °F. In another embodiment, the extraction can be carried out in the temperature range of 80 to 150 °F. In another embodiment, the extraction can be carried out in the temperature range of 120 to 150 °F. In another embodiment, the extraction can be carried out in the temperature range of 125 to 145 °F.

[0401] In one embodiment, the extraction time is between 60 and 150 minutes. In another embodiment, extraction time is between 70 and 120 minutes. In another embodiment, extraction time is between 80 and 110 minutes.

[0402] In one embodiment, the extraction media can be supercritical CO2(carbon dioxide). The efficacy of supercritical carbon dioxide will depend on the selected pressure, temperature and period of time which are used for the supercritical carbon dioxide to mix with the Noble Kava charge in a sealed mixing vessel to dissolve the species targeted for removal. The high-pressure stream of gas plus material that has been dissolved at the particular pressure level for the fraction is passed through the pressure reduction valve. When the pressure is reduced to 1 atmosphere across the valve, the dissolved material precipitates as a fraction and collects in a filter flask. Multiple fractions can be obtained depending on the amount of time that the high-pressure stream of gas plus material is allowed to come out of the sealed mixing vessel; lowest molecular weight species or impurities come out first and with passage of time, as higher molecular weight species are removed leaving behind an enhanced Noble Kava extract that is of high quality, purity, having higher concentration of the six major Kavalactones and more effective.

[0403] In another embodiment, the extraction process comprises an extracting media comprises supercritical CO2(carbon dioxide). In one embodiment, the extracting media comprises supercritical CO2with process conditions that will remove at least one low molecular weight

fraction. In another embodiment, the extracting media comprises supercritical CO2with process conditions that will remove at least two low molecular weight fractions.

[0404] In one embodiment, the extraction process consists of multiple extraction steps and multiple extracting media including supercritical CO2and at least one alcohol-water mixtures. In another embodiment, the extraction process consists of multiple extraction steps and multiple extracting media including supercritical CO2and glycerin or glycerin-water mixture.

[0405] In one embodiment, the extraction process consists of first extraction step using ethanol or ethyl alcohol and a second extraction step using supercritical CO2. In another embodiment, the extraction process consists of multiple extraction steps using ethanol or ethyl alcohol and multiple extraction step using supercritical CO2. In another embodiment, the extraction process consists of one or multiple extraction steps using ethanol or ethyl alcohol and one or multiple extraction steps using supercritical CO2.

[0406] In another embodiment, the extraction process consists of multiple extraction steps and multiple extracting media including supercritical CO2and one or multiple extracting media selected from the list that includes but not limited to alcohol, glycerin, alcohol-water mixture, glycerin-water mixture, and alcohol - glycerin mixture, acetate or mixtures thereof. In another embodiment, the extraction process comprises a combination of multiple extraction steps, multiple extracting media including supercritical CO2, water, ethanol and ethanolic mixture.

[0407] In one embodiment, the yield of the enhanced Noble Kava extract is how much enhanced Noble Kava extract is obtained or produced from the original Noble Kava plant parts that are being extracted from the Noble Kava plant part being extracted. In another embodiment, the yield of the enhanced Noble Kava extract is how much enhanced Noble Kava extract with higher amounts of six major Kavalactone content, higher concentration of six major Kavalactone content, or

favorable compositional mix of six major Kavalactone is obtained or produced from the original Noble Kava plant parts that are being extracted from the Noble Kava plant part being extracted.

[0408] In one embodiment, the extraction process produces an extraction yield of 5 to 60% by weight based on original amount of Noble Kava that was used in extraction. In another embodiment, the extraction process produces an extraction yield of 10 to 50% by weight based on original amount of Noble Kava plant part that was used for extraction. In another embodiment, the extraction process produces an extraction yield of 20 to 50% by weight based on original amount of Noble Kava plant part that was used for extraction. In another embodiment, the extraction process produces an extraction yield of 15 to 55%by weight based on original amount of Noble Kava plant part that was used for extraction. In another embodiment, the extraction process produces an extraction yield by weight based on original amount of Noble Kava plant part that was used for extraction which was greater than 5%. In another embodiment, the extraction process produces an extraction yield by weight based on original amount of Noble Kava plant part that was used for extraction which was greater than 20%. In another embodiment, the extraction process produces an extraction yield by weight based on original amount of Noble Kava plant part that was used for extraction which was greater than 30%. In another embodiment, the extraction process produces an extraction yield by weight based on original amount of Noble Kava plant part that was used for extraction which was greater than 40%.

[0409] The post extraction recovery and/or concentration process involves filtering of the product that has undergone extraction. Filtering the product that has undergone extraction removes particulates, solids, components of soil and / or inorganic components of soil. The process involves a number or includes but not limited to filtering, filtering assisted with vacuum, filtering at elevated temperature, drying to remove moisture and drying in oven to at least partially removing the

moisture or reducing the amount of moisture. In accordance with the level of moisture, the enhanced Noble Kava extract after drying can be in the form of powder, paste or liquid forms,

[0410] In one embodiment, enhanced Noble Kava extracts and at least one cannabis component and other ingredients such as juice, and / or juice concentrate, optionally milk thistle, Magnesium, vitamins, sugars, flavors and colors are mixed in a mixing vessel at about ambient temperature, mixing speed that mixes thoroughly and mixing time of at least 1 minute. In another embodiment, the enhanced Noble Kava extract and the supplement dry mix optionally containing Theanine and Vitamin B and supplement liquid mix containing enhanced Noble Kava extract and poppy and optionally lemon are mixed first and then the juice concentrate and the flavored juice concentrate are added, and all the ingredients are mixed at ambient temperature. Depending on the form of the end product as chewable gummy candies, beverages, associated confectionaries, and effervescent powder or tablet and dietary supplement, a final step converts the liquid mixtures into different end products or leaves it in liquid form.

[0411] The present invention provides a composition for beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement comprising enhanced Noble Kava extract and at least one additional component of cannabis and / or hemp extract and / or poppy with enhanced Noble Kava extract producing a state of calmness, relaxation, providing calming benefits, serving as a relaxant, providing relief from anxiety providing relief from nausea wherein the enhanced Noble Kava extract was obtained from roots, rhizomes and/or lower part of the basal stem of the Noble Kava plant using an extraction process wherein the extraction process consists of one or multiple extraction steps using ethanol or ethyl alcohol and one or multiple extraction steps using supercritical CO2to produce an enhanced Noble Kava extract wherein the enhanced Noble Kava extract consists of at least 50 % of the total Kavalactones being the six major Kavalactones with higher pharmacological activity.

[0412] In another embodiment, for safety and efficacy of use of Noble Kava extract, it is necessary that all Noble Kava extracts be manufactured only from known Noble parent material, assayed for quality using current validated methods, and that non-Noble Kava and extraneous parts and fillers not be used. The following test methods have been established for this purpose:

[0413] **Identity, purity, strength and composition:**

[0414] *Piper methysticum* Root and Rhizome Powder Final Authorized Version 1.0 (USP Herbal Medicines Compendium)

[0415] **Indicators of Noble varieties:**

[0416] In one embodiment, noble kava has a chemical composition where Kavain comprises the largest percentage of Kavalactone content (1st position in the chemotype) and dihydromethystin appears in the 4th, 5th, or 6th position in the chemotype of 6 major Kavalactones (Kavain (K), methysticin (M), demethoxyyangonin (DMY), yangonin (Y), Dihydrokavain (DHK) and dihydromethysticin (DHM)).

[0417] In one embodiment, noble kava has a (%Transmittance at 470nm / %Transmittance at 520nm)*100 ratio of ≥35 by photometric method.

[0418] In one embodiment, noble kava has a FBK content < 0.15%by HPLC

[0419] In one embodiment, noble kava has a K/DHM ratio > 2.5 by HPLC

[0420] In another embodiment, the Noble Kava has a total flavokavain content of less than 0.3%, preferably less than 0.27% and more preferably less than 0.25%.

[0421] In another embodiment, the Noble Kava has FBK content of less than 0.15%, preferably less than 0.13% and more preferably less than 0.11%.

Example 1

[0422] A relaxation drink produced with 4 gallons of concentrated juice mix, 4 Kg of supplement dry mix that contains Theanine, enhanced Noble Kava extract, Magnesium, Vitamin B, and milk thistle, and 32 oz. of poppy extract.

Example 2

[0423] A relaxation drink produced with 12 gallons of concentrated juice mix, 500 gm of supplement dry mix that contains Theanine, Vitamin B, and milk thistle, and 359 oz. of poppy and enhanced Noble Kava extract.

Example 3

[0424] A relaxation drink produced with 7 gallons of concentrated juice mix, 280 gm of supplement dry mix that contains Theanine, and milk thistle, and 230 oz. of liquid mix (poppy and enhanced Noble Kava extract).

Example 4

[0425] A relaxation drink produced with 25 gallons of concentrated juice mix, 17 gallons of additional flavor juice concentrate, 1000 gm of supplement dry mix that contains Theanine, and Vitamin B, and 5.5 gallons of supplemental liquid mix (poppy, enhanced Noble Kava extract and lemon).

Example 5

[0426] A relaxation drink produced with 50 gallons of concentrated juice mix, 33 gallons of additional flavor juice concentrate, 2000 gm of supplement dry mix that contains Theanine, and Vitamin B, and 10 gallons of supplemental liquid mix (poppy, enhanced Noble Kava extract and lemon), 80 oz. of enhanced Noble Kava extract.

Example 6

[0427] A relaxation drink produced with 20 gallons of concentrated juice mix, 15 gallons of additional flavor juice concentrate, 500 gm of supplement dry mix that contains Theanine, and

Vitamin B, and 7.5 gallons of supplemental liquid mix (poppy, enhanced Noble Kava extract and lemon), 59 oz. of enhanced Noble Kava extract.

Example 8

[0428] Aerobic mesophilic plate count for the enumeration of bacteria is analyzed in the embodiment to determine the microbial counts for quality assessment of untreated Noble Kava root water extract. In the first step untreated Noble Kava root water extract homogenate is prepared by mixing the untreated Noble Kava root water extract with diluent peptone water (0.1%) in the ratio 1:10. The particulates of the untreated Noble Kava root water extract is allowed to settle for 2-3 minutes and then diluent containing the minimum particles of Noble Kava root extract is drawn for further analysis. The decimal solutions of drawn solution containing minimum particles of Noble Kava root extract were made by shaking each dilution 25 times in 30 cm arc. For each dilution new sterile pipette was employed in the analysis. This dilution is done by pipetting out 1 mL of untreated Noble Kava root extract homogenate into a tube containing 9 mL of the diluent peptone water. Four such dilution tubes are made in this analysis. Next step is pour plating in which labeled petri plates in which 1 mL of Noble Kava root extract homogenate and of such dilutions which have been selected for plating into a petri dish in duplicate is pipetted out and transferred. 10 mL of plate count agar (PCA) is poured within 15 minutes from the time of preparation of the original solution. Then mixing of media and dilutions is performed by swirling gently clockwise, anticlockwise, to and fro thrice and care has been taken for the contents not touching the lid and allowed to set. Next step involves incubation in which the prepared dishes are incubated and inverted at 35°C for 48 hours. The final step of this analysis involves the counting of colonies of the incubated dishes and results are recorded per dilution counted. The result of aerobic mesophilic plate count for the enumeration of bacteria in untreated Noble Kava root water

extract in this analysis is found to be 8.40 x 10^6 cfu/g. [Compendium of Methods for the Microbiological Examination of Foods (CMMEF, Chapter 8.72, APHA, 5th Edition, 2015) is the reference used to perform this analysis].

Example 9

[0429] In this example, untreated Noble Kava product is subjected to ultra-high temperature (UHT) pasteurization and analysis is carried out for enumeration of aerobic bacteria as well as yeasts and molds for the UHT treated Noble Kava product. Up to 10% untreated Noble Kava root water extract is subjected to uninterruptedly run through a Tetra Pak VTIS direct steam injection ultra-high temperature (UHT) pasteurization system that uses a prewarming step of about 135°C (275°F) for about 36 seconds and then heat the sample to a temperature range of from about 135°C (275°F) to 190°C (375°F) for about 5 seconds. In this example, the ultra-pasteurizing temperature is about 375°F. The UHT treated Noble Kava product is then sent to a chilling condenser, which cools the UHT treated Noble Kava product to a temperature of from about 27°C (80°F) to 32°C (90°F) within 5 seconds. This cooling is with or without flash in this experiment. The UHT treated Noble Kava product is then run through a high-pressure homogenizer preferably at about 3000 to 5000 psi, or as low as 2000 psi. This process of the Noble Kava product includes with or without homogenization. Then the UHT treated Noble Kava product is kept at a reception temperature of 3.1°C for 6 days and sent to an aseptic bag filler machine which sterilizes the bag with steam before it is filled with the sterilized UHT treated Noble Kava product. This packaging of the UHT treated Noble Kava product can be with or without aseptic packaging in the embodiment.

[0430] The final UHT treated Noble Kava product is checked for aerobic mesophilic plate count for the enumeration of bacteria as well as enumeration of yeasts and molds in the embodiment. Aerobic mesophilic plate count for the enumeration of bacteria is analyzed in the embodiment to

determine the microbial counts for quality assessment of UHT treated Noble Kava product. In the first step UHT treated Noble Kava product homogenate is prepared by mixing the UHT treated Noble Kava product with diluent peptone water (0.1%) in the ratio 1:10. The particulates of the UHT treated Noble Kava product is allowed to settle for 2-3 minutes and then diluent containing the minimum particles of UHT treated Noble Kava product is drawn for further analysis. The decimal solutions of drawn solution containing minimum particles of UHT treated Noble Kava product were made by shaking each dilution 25 times in 30 cm arc. For each dilution new sterile pipette was employed in this analysis. This dilution is done by pipetting out 1 mL of UHT treated Noble Kava product homogenate into a tube containing 9 mL of the diluent peptone water. Four such dilution tubes are made in this analysis. Next step is pour plating in which labeled petri plates in which 1 mL of UHT treated Noble Kava product homogenate and of such dilutions which have been selected for plating into a petri dish in duplicate is pipetted out and transferred. 10 mL of plate count agar (PCA) is poured within 15 minutes from the time of preparation of the original solution. Then mixing of media and dilutions is performed by swirling gently clockwise, anticlockwise and care has been taken for the contents not touching the lid and contents were allowed to set. Next step involves incubation in which the prepared dishes are incubated and inverted at 35°C for 48 hours. The final step of this analysis involves the counting of colonies of the incubated dishes and results are recorded per dilution counted. The result of aerobic mesophilic plate count for the enumeration of bacteria in UHT treated Noble Kava product in this analysis is found to be <100 cfu/g. [Compendium of Methods for the Microbiological Examination of Foods (CMMEF, Chapter 8.72, APHA, 5th Edition, 2015) is the reference used to perform this analysis].

[0431] Analysis for the enumeration of yeasts and molds is performed in the embodiment to determine the microbial counts for quality assessment of UHT treated Noble Kava product. Inoculation of 0.1 mL of appropriate decimal dilutions of the UHT treated Noble Kava product in

duplicate onto the surface of dichloran rose bengal chloramphenicol (DRBC) agar was performed in the first step of the analysis. The plates used were dried overnight at room temperature. The process of spreading the inoculum over the entire surface of the plate using a sterile, bent-glass rod was performed followed by incubation of plates upright at 25°C. The growth of yeasts and molds were examined after 3-, 4- and 5-days incubation. Predictable results for the formation of colonies of molds and yeasts were apparent within 5 days of incubation. The colonies of yeast and molds appear in pink color due to the uptake of rose bengal from DRBC agar. The enumeration of yeasts and molds in this analysis for the UHT treated Noble Kava product is found to be <10 cfu/g. [Compendium of Methods for the Microbiological Examination of Foods (CMMEF, Chapter 21.51, APHA, 5th Edition, 2015) is the reference used to perform this analysis].

[0432] The UHT treated Noble Kava product of example 2, after dilution with water at the mix proportions, when tested for sensory features by consumers, all fulfil the necessities of a Noble Kava product. The UHT treated Noble Kava product does not display any visible separation or coagulation or change in color. The aroma and taste of Noble Kava product satisfied the criteria without the negative attributes of features such as cooked, scorched, burnt, etc. Additionally, the UHT treated Noble Kava product has the texture and mouth sense of Noble Kava without the imperfections for Noble Kava product which may be described as coagulated, thin, moist, turbid, gritty or divided.

Example 10

[0433] In this example, untreated Noble Kava juice or untreated Noble Kava product kept in a pressurized steel vessel is subjected to microwave volumetric heating at 460 MHz to 2450 MHz in a microwave reactor. The heating was performed uniformly throughout the cylindrical vessel around the circumference of the cylinder and the Noble Kava juice or Noble Kava product is

flowing under a plug flow regime. After exposing to microwave heating at frequency of 460 MHz the Noble Kava juice or Noble Kava product is allowed to cool at 25°C. On the similar ground, after exposing to microwave heating at frequency of 915 MHz, the Noble Kava juice or Noble Kava product is allowed to cool at 25°C. Another experiment is performed by exposing Noble Kava juice or Noble Kava product to microwave heating at frequency of 2450 MHz and the content is allowed to cool at 25°C. It is expected that this microwave volumetric heating treatment would reduce considerably the microbes and improve the shelf life of Noble Kava juice.

Example 11

[0434] In this example, untreated Noble Kava is cooked at about 238°C (460°F) while being exposed to high-pressures. Untreated Noble Kava is cooked for about 2-4 seconds and then pounded to a particle size of about 0.045 to 0.050 inches. This pounded untreated Noble Kava is agglomerated by adding 120 mL of water during the process of agglomeration. The formed particles or granules of wet concoction are allowed to dry using an oven preheated at temperature of 90°C. The drying is continued until the moisture content of the individual particles or granules are concentrated to 11 to 13 percent by weight. The dried untreated Noble Kava particles or granules were then placed between the hydraulically operated plates where they were exposed to a pressure of 450 MPa (65267 psi) and heated to a temperature of 238°C (460°F) for about 1 to 2 seconds. The pressure was speedily released so that the resulting HPP treated Noble Kava became puffed and the individual particles or granules form a sheet like structure with mosaic like appearance. The dried untreated Noble Kava or particles granules in another analysis were placed between the hydraulically operated plates where they were exposed to a pressure of 600 MPa (87022.6 psi) and heated to a temperature of 238°C (460°F) for about 1 to 2 seconds. The pressure

was quickly released so that the resulting HPP treated Noble Kava became puffed and the individual particles form a sheet like structure with mosaic like appearance.

[0435] The above HPP treated Noble Kava product is checked for aerobic mesophilic plate count for the enumeration of bacteria as well as enumeration of yeasts and molds in the embodiment. Aerobic mesophilic plate count for the enumeration of bacteria is analyzed in the embodiment to determine the microbial counts for quality assessment of HPP treated Noble Kava product. In the first step HPP treated Noble Kava product homogenate is prepared by mixing the HPP treated Noble Kava product with diluent peptone water (0.1%) in the ratio 1:10. The particulates of the HPP treated Noble Kava product is allowed to settle for 2-3 minutes and then diluent containing the minimum particles of HPP treated Noble Kava product is drawn for further analysis. The decimal solutions of drawn solution containing minimum particles of HPP treated Noble Kava product were made by shaking each dilution 25 times in 30 cm arc. For each dilution new sterile pipette was employed in the analysis. This dilution is done by pipetting out 1 mL of HPP treated Noble Kava product homogenate into a tube containing 9 mL of the diluent peptone water. Four such dilution tubes are made in this analysis. Next step is plating in which labeled petri plates in which 1 mL of HPP treated Noble Kava product homogenate and of such dilutions which have been selected for plating into a petri dish in duplicate is pipetted out and transferred. 10 mL of plate count agar (PCA) is poured within 15 minutes from the time of preparation of the original solution. Then mixing of media and dilutions is performed by swirling gently clockwise, anticlockwise and care has been taken for the contents not touching the lid and contents were allowed to set. Next step involves incubation in which the prepared dishes are incubated and inverted at 35°C for 48 hours. The final step of this analysis involves the counting of colonies of the incubated dishes and results are recorded per dilution counted. The result of aerobic mesophilic plate count for the enumeration of bacteria in HPP treated Noble Kava product in this analysis is

found to be 8000 cfu/g for the HPP treated Noble Kava product measured at pressure of 450 MPa and 5500 cfu/g for the HPP treated Noble Kava product measured at pressure of 600 MPa. [Compendium of Methods for the Microbiological Examination of Foods (CMMEF, Chapter 8.72, APHA, 5th Edition, 2015) is the reference used to perform this analysis].

[0436] Analysis for the enumeration of yeasts and molds is performed in the embodiment to determine the microbial counts for quality assessment of HPP treated Noble Kava product. Inoculation of 0.1 mL of appropriate decimal dilutions of the HPP treated Noble Kava product in duplicate onto the surface of dichloran rose bengal chloramphenicol (DRBC) agar is performed in the first step of the analysis. The plates used were allowed to dry overnight at room temperature. The process of spreading the inoculum over the entire surface of the plate using a sterile, bent-glass rod is performed followed by incubation of plates upright at 25°C. The growth of yeasts and molds were examined after 3-, 4- and 5-days of incubation. Predictable outcomes for the formation of colonies of molds and yeasts were apparent within 5 days of incubation. The colonies of yeast and molds appear in pink color due to the uptake of rose bengal from DRBC agar. The enumeration of yeasts in this analysis is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of 450 MPa as well as 600 MPa. The enumeration of molds in this analysis is found to be <10 cfu/g for HPP treated Noble Kava at the pressure of 450 MPa as well as 600 MPa. [Compendium of Methods for the Microbiological Examination of Foods (CMMEF, Chapter 21.51, APHA, 5th Edition, 2015) is the reference used to perform this analysis].

Example 12

[0437] Particle sizes in the UHT treated Noble Kava juice were measured using a method utilizing Malvern Mastersizer instrument with water as the continuous phase using the 45 mm lens and the sample weighted was 0.689%. Ultrasound was applied to the Mastersizer tank for one minute before the measurement of the UHT treated Noble Kava juice under investigation. The surface

weighted mean D[3,2] was calculated for UHT treated Noble Kava juice and the result is found to be 11.380 μm. The volume weighted mean D[4,3] was calculated for UHT treated Noble Kava juice and the result is found to be 31.962 μm for concentration of 0.0174 %Vol.

Example 13

[0438] In this example, Noble Kava juice is sterilized at a sterilization temperature of 134°C (274°F), or a pasteurization temperature at 65oC (149°F) to 134°C (274°F) by high temperature short time (HTST) method. This method involves holding the heated Noble Kava juice at the temperature either sterilization or pasteurization for a selected holding time period of about 0.1 to 0.2 seconds to affect the destruction of the desired microorganisms. Then the heated Noble Kava juice is allowed to rapid cooling, for example, below 65°C (149°F) such as 5°C (41°F) to 25°C (77°F). This treatment includes with or without flash cooling, with or without homogenization and with or without aseptic packaging of the Noble Kava juice. In this example, heat sensitive Noble Kava juice is circulated during the heating, cooling and holding time periods.

Example 14

[0439] In this example, untreated Noble Kava juice can be treated using the device used for creating pulsed electric field (PEF). Nearly 45 kilovolts/cm field strength having a pulse duration of 3 microseconds was applied to effect 4 positive and 4 negative pulses per second of untreated Noble Kava juice. This PEF treatment involves a total of 35 positive and 35 negative pulses. The heating was maintained at 35°C to 40°C or below 40°C during the processing of Noble Kava juice. The cold-water circulation was maintained to control the temperature of the heating process and water circulation in this example is performed at 10°C to 15°C. It is expected that processing of Noble Kava juice in this PEF treatment would decreases the microbes considerably and enhance the shelf life of Noble Kava juice.

Example 15

[0100] In this example, untreated Noble Kava juice is subjected to non-ionizing radiation sterilization treatment namely microwave irradiation, after being placed in a bottle and the bottle capped. The microwave irradiation was performed about 50 to 60 seconds and the raise in temperature of the come-up zone is about 78°C to 80°C of the system. The capped Noble Kava juice was maintained at a target temperature of about 78°C for about 1 to 2 minutes. The bottle and the product were then allowed to cool at 25°C. It is expected that this non-ionization treatment would reduce microbes reasonably and extend the shelf life of Noble Kava juice.

Example 16

[0101] In this example, untreated Noble Kava juice is subjected to ionizing radiation sterilization technique namely γ-rays irradiation using Cobalt-60 as radiation source. Untreated Noble Kava juice is canned and irradiated with γ-rays from Co-60 source at -30°C to -40°C and received a dose in the range of 3.5 to 6.5 megarads. Following ionizing radiation sterilization, the sterilized Noble Kava juice is allowed to cool at 25°C. It is expected that this ionization treatment would reduce considerably the microbes and improve the shelf life of Noble Kava juice.

Example 17

[0102] Appropriate carbohydrate degrading enzymes, lipases and proteases are all commercially obtainable. Enzymes by definition are not exhausted by reaction with their substrate. Therefore, while there is no minimum or maximum amount of enzyme that can be added to the Noble Kava juice or Noble Kava product, the amount will normally be determined based on the rate at which the enzyme acts under the circumstances where the substrate is to be digested. For example, at pH 5.0 and 35°C in the upper part of the lower intestine, time taken for the amount of substrate to be digested, divided by the time taken for the Noble Kava juice or Noble Kava product passes via the

intestine. Since there are issues related to enzyme stability and interference from other ingredients in the Noble Kava juice or Noble Kava product, a surplus of enzyme will generally be provided. Use of protein microspheres for encapsulation of biologically labile enzymes are added as supplement in Noble Kava juice or Noble Kava product and projected for release in the gastrointestinal tract. Most appropriate polymers for use as protein microspheres are hydrolytically unstable and can be considered to degrade within a limited hour of exposure to water. These would be used in dried or lyophilized requirements, so that release would be started at the time of rehydration and significantly finished at the time the Noble Kava juice or Noble Kava product reached the small intestine.

Example 18:

In this example, Noble Kava Colorimeter COL1A Ver. 2 Operation Manual is operated.

A. **Sample preparation:**

1. Place 3g dry powdered Noble Kava and 9ml acetone in 15ml plastic centrifuge tube.
2. Shake 2 minutes.
3. Centrifuge 15 minutes.
4. If top portion is not relatively clear, let settle.
5. Transfer supernatant (clear portion) to glass test tube, cap tube.
6. Let settle until totally clear. Sample must be at least 3cm from bottom of tube to top of sample.

B. **Colorimeter and Program Setup:**

1. Connect Noble Kava Colorimeter to computer using USB cable (or to iOS device using Bluetooth).

2. Run Graphical Analysis application. NOTE: If program gives error "Graphical Analysis is not supported within the Chrome browser on Windows. Use the Windows Version instead.," do NOT use Windows version. Type CTRL-D to bypass this screen, and the program will load.

After program loads, click box in upper right, then click "Table" as shown in **FIG. 3.**

3. Screen should appear as below. Now click "Mode" in lower left in **FIG. 4.** Change "Rate" to "1," and click "Done" as shown in **FIG. 5.**

C. **Colorimeter Calibration:**

1. Lamp in upper left should have illuminated when USB cord was connected. Press arrows to select 470nm as shown in **FIG. 6.**

2. Prepare glass tube containing 5ml acetone only (no Noble Kava) and insert in colorimeter. Press yellow "CAL," wait until lamp below button stops flashing.

3. In the Graphical Analysis program, click "Collect" as shown in **FIG. 7**, wait 3-5 seconds, click again to stop. "Transmittance" column (%T) should read 100%. If not, ensure tube is clean and repeat step 2.

D. **Sample Measurement:**

1. Insert prepared sample in colorimeter

2. Click "Collect," click again to stop when reading is consistent.

3. Record sample number, wavelength, and transmittance value.

4. Repeat for each sample.

5. Change wavelength to 565nm and recalibrate (refer to section C.)

6. Retest each sample at 565nm, record sample number, wavelength, and transmittance value as shown in **FIG. 8**.

E. **Parameter Calculation**

1. Value is calculated using the following formula: x= (%T 470nm/%T 565nm) *100 as shown in **FIG. 9.**

2. In the above Excel example, the value for sample #1 is calculated by placing formula (=(B2/C2)*100) in cell D1:

Once this formula is typed in the first "Value" cell, it may be copied and pasted to the remaining cells in the "Value" column.

F. **Determination**

1. **Table 4** below are the average values from tests of verified samples of Vanuatu Noble and two day Kava:

Table 4: The average values from tests of verified samples of Vanuatu Noble and two day Kava:

		Value
Individual Parts	Noble chips	55
	Noble roots	47
	Two day chips	23
	Two day roots	17
65%chip/35%root	Noble	52
65%chip/35%root	Two day	21

G. **Guidelines for Noble Kava Evaluation**

Noble Kava will show a test value of >35 and two day Kava will return a value <30.

Example 19:

In operation a sample of Noble Kava root is charged to the extraction vessel, the vessel is sealed, and the vessel heated to test temperature. Gas at selected pressure and preheated to temperature is passed through the charge for a selected period of time. (It is not the time, but mass of gas passed through the charge, that is the important parameter). The high-pressure stream of gas plus material that has been dissolved at the particular pressure level for the fraction is passed through the pressure reduction valve (PRV). When the pressure is reduced to 1 atm across the valve, the dissolved material precipitates and collects in a filter flask. The ambient gas passes through a flow meter (and we adjust the velocity with the pressure reduction valve, which is also a flow control valve), then in series through a Dry Test Meter (DTM) which measures the mass of gas that has dissolved the (later–weighed) fraction. From the measured values and analysis, solubilities, distribution coefficients, solvent-to-feed ratios (S/F) can be calculated.

Table 5 highlights the observed condition of MUNSELL-1, Noble Kava roots introduced into extraction vessel and the fractions collected. MUNSELL-1 was carried out at two conditions. MUNSELL-1-1 is an extract of Noble Kava that was made utilizing Super Critical CO2extraction using the process shown in **FIG. 10**. MUNSELL-1-2 is an extract of Noble Kava that was made utilizing Ethanolic Extraction using the process shown in **FIG. 10**. **FIG. 11** demonstrates the subtle difference in color between the control, which is browner, and the residual, which was slightly paler. The MUNSELL-1-1 Noble Kava extract was a bright yellow material as shown in **FIG. 12**. The MUNSELL-1-2 Noble Kava extract was a darker color as shown in **FIG. 13**. The residual remaining in the extractor after processing CO2 was also collected and designated as “SPC.”

Table 5 shows the material balance as follows: 168.36g charged, 163.70g collected (sum of MUNSELL-1-1 extract, MUNSELL-1-2 extract and SPC); mass balance (% of collected weight divided charged weight) = 97.23%; and process yield (percentage of sum of MUNSELL-1-1 extract and MUNSELL-1-2 extract divided by charge weight) = 16.36%.

Table 5: Relevant data and observations of MUNSELL-1 from CO2and ethanol extraction

Fraction	**Weight Collected (g)**	**Observations**
Charge	168.36	earthy brown raw material
MUNSELL-1-1 Extract	21.81	bright yellow material
MUNSELL-1-2 Extract	5.73	darker, mustard yellow material
SPC	136.16	earthy material, slightly lighter than original raw material

Example 20:

The Noble Kava was extracted from same Noble Kava material using both CO2 and Ethanol extractions processes and the chemical analysis of the extracted product is as shown in the Table 6. EX1 and EX5 are end products produced from Ethanol extraction. COS is the CO2 extraction. SPC is Spent Material from CO2 extraction and SPE is Spent Material from ethanol extraction.

Table 6: **Chemical analysis of extracted product from Noble Kava using ethanol and CO2method and analyzed by HPLC method**

Sample Description	**Chemical Analysis**	**Result (wt. % of analyte sample)**

EX1	Demethoxyyangonin	4.52
	Dihydrokavain	12.94
	Dihydromethysticin	9.13
	Kavain	9.81
	Methysticin	9.89
	Yangonin	8.84
	Total Kavalactones	55.00
EX5	Demethoxyyangonin	5.52
	Dihydrokavain	17.36
	Dihydromethysticin	8.49
	Kavain	10.08
	Methysticin	3.07
	Yangonin	2.14
	Total Kavalactones	46.70
COS	Demethoxyyangonin	5.52
	Dihydrokavain	17.36
	Dihydromethysticin	8.49
	Kavain	10.08
	Methysticin	3.07
	Yangonin	2.14
	Total Kavalactones	46.70

SPC	Demethoxyyangonin	0.370
	Dihydrokavain	0.330
	Dihydromethysticin	0.960
	Kavain	1.300
	Methysticin	1.810
	Yangonin	2.370
	Total Kavalactones	7.200
SPE	Demethoxyyangonin	0.055
	Dihydrokavain	0.110
	Dihydromethysticin	0.026
	Kavain	0.043
	Methysticin	0.026
	Yangonin	0.120
	Total Kavalactones	0.380

Example 21

The kava product comprises a beverage, an aerated beverage, a candy, a hard and chewable gummy candy, a confectionary, an effervescent powder or tablet, or a dietary supplement, and wherein the product is edible or drinkable in a solid form, a powder form, a paste form or a liquid form, wherein the product comprises the Kavalactone extract. **Table 7** below signify the typical concentrations of individual Kavalactones in the final kava product extracted with an ethanolic process as

measured by HPLC. Each sample having a different ending amount of total ethanol left in the product ranging from about 0% to 20% by weight.

Table 7: Typical concentrations of Kavalactones in the finished product

Sample Description	Analysis	Result	Units
1A	Ethanol	2.3	%
	Demethoxyyangonin	ND	%
	Dihydrokavain	0.93	%
	Dihydromethysticin	0.48	%
	Kavain	0.79	%
	Methysticin	0.17	%
	Yangonin	0.16	
	Total Kavalactones	2.54	%
			%
1B	Ethanol	<0.50	%
	Demethoxyyangonin	ND	
	Dihydrokavain	2.65	%
	Dihydromethysticin	1.17	%
	Kavain	1.81	%
	Methysticin	0.45	%
	Yangonin	0.47	%
	Total Kavalactones	6.55	%

2A	Ethanol	20	%
	Demethoxyyangonin	ND	
	Dihydrokavain	2.70	%
	Dihydromethysticin	1.16	%
	Kavain	1.74	%
2B	Ethanol	4.8	%
	Demethoxyyangonin	ND	
	Dihydrokavain	0.79	%
	Dihydromethysticin	0.45	%
	Kavain	0.58	%
	Methysticin	0.14	%
	Yangonin	0.14	%
	Total Kavalactones	2.09	%

*ND: Not determined

Incorporation by Reference

Throughout this application, various references including publications, patents, and pre-grant patent application publications are referred to. Disclosures of these publications in their entireties are hereby incorporated by reference into this application to more fully describe the state of the art to which this invention pertains. It is specifically not admitted that any such reference constitutes prior art against the present application or against any claims thereof. All publications, patents, and pre-grant patent application publications cited in this specification are herein incorporated by reference, and for any and all purposes, as if each individual publication or patent application were

specifically and individually indicated to be incorporated by reference. In the case of inconsistencies, the present disclosure will prevail.

Claims:

1) A concentrate comprising a Kavalactone extract formed by contacting a Noble Kava with an extraction agent comprising supercritical CO2 or ethanol, the Kavalactone extract comprising Kavain, dihydroKavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin, wherein the concentrate comprises 10% or more of the Kavalactone extract as measured by HPLC.
2) The concentrate of claim 1, wherein the concentrate comprises 60% or more of the Kavalactone as measured by HPLC.
3) The concentrate of claim 1, wherein the concentrate comprises 70% or more of the Kavalactone as measured by HPLC.
4) The concentrate of claim 1, wherein the concentrate comprises 80% or more of the Kavalactone as measured by HPLC.
5) The concentrate of claim 1, wherein the Kavalactone is obtained from a selected part of a Noble Kava plant.
6) The concentrate of claim 5, wherein the selected part comprises a lower part of a basal stem, a rhizome and/or a root.
7) A product comprising a Kavalactone extract comprising Kavalactones comprising two or more of Kavain, dihydroKavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin, wherein the Kavalactone extract is an extract of a Noble Kava, wherein the product comprises a beverage, an aerated beverage, a candy, a hard and chewable gummy candy, a confectionary, an effervescent powder or tablet, or a dietary supplement, and wherein the product is edible or drinkable in a solid form, a powder form, a paste form or a liquid form, wherein the product comprises the Kavalactone extract, wherein the Kavalactone extract is formed by contacting the Noble Kava with an extraction agent comprising supercritical CO2 or ethanol, wherein the Kavalactone extract comprises 40% or more by weight of the Kavalactones as measured by HPLC.
8) The product of claim 7, wherein the selected part comprises the basal stem.
9) The product of claim 7, wherein the selected part comprises the rhizome.
10) The product of claim 7, wherein the selected part comprises the root.
11) The product of claim 7, wherein the product is the beverage.
12) The product of claim 7, wherein the product is the aerated beverage.

13) The product of claim 7, wherein the product is the candy.

14) The product of claim 7, wherein the product is the hard and chewable gummy candy.

15) The product of claim 7, wherein the product is the confectionary.

16) The product of claim 7, wherein the product is the effervescent powder or tablet.

17) The product of claim 7, wherein the product is the dietary supplement.

18) The product of claim 7, wherein the product is in the solid form.

19) The product of claim 7, wherein the product is in the powder form.

20) The product of claim 7, wherein the product is in a paste form.

21) The product of claim 7, wherein the product is in a liquid form.

22) A method of making a concentrate comprising a Kavalactone extract comprising Kavain, dihydroKavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin, wherein the concentrate comprises 10% or more of the Kavalactone extract as measured by HPLC, the method comprises extracting the Kavalactone extract from a Noble Kava and concentrating the Kavalactone extract to form the concentrate, wherein the extracting the Kavalactone extract from the Noble Kava comprises contacting an extraction agent with the Noble Kava, wherein the extraction agent comprises a non-organic solvent, CO2 and/or ethanol.

23) The method of claim 22, further comprising post extraction recovery of the Kavalactone extract.

24) The method of claim 22, wherein the extraction agent comprises supercritical CO2.

25) The method of claim 22, wherein the extraction agent comprises supercritical CO2 or ethanol.

26) The method of claim 22, wherein the extraction agent comprises the non-organic solvent or supercritical CO2.

27) The method of claim 22, wherein the extraction agent consists of the non-organic solvent.

28) The method of claim 22, wherein the extraction agent consists of supercritical CO2.

29) The method of claim 22, wherein the extraction agent consists of ethanol.

30) The method of claim 22, wherein the extraction agent consists of the non-organic solvent and supercritical CO2.

31) The product of claim 7, wherein the product further comprises an additive comprising a tetrahydrocannabinol (THC) extract, a cannabis extract, a hemp extract or combinations thereof.

32) The product of claim 7, wherein the product further comprises an additive comprising a tetrahydrocannabinol (THC) extract.

33) The product of claim 7, wherein the product further comprises an additive comprising a cannabis extract.

34) The product of claim 7, wherein the product further comprises an additive comprising a hemp extract.

35) The product of claim 31, wherein the THC extract or the cannabis extract is obtained from hemp, hemp stalk, hemp stem, hemp seed, cannabis, cannabis stalk, cannabis stem, cannabis seed, cannabis flower or combinations thereof.

36) The product of claim 33, wherein the cannabis extract comprises cannabidiol (CBD).

37) The product of claim 7, wherein the product contains 5 mg to 950 mg of the Kavalactone extract.

38) The product of claim 31, wherein the product contains 5 mg to 950 mg of the Kavalactone extract and 1 mg to 900 mg of the THC extract.

39) The product of claim 31, wherein the product contains the cannabis extract and/or the hemp extract, 5 mg to 950 mg of the Kavalactone extract and 1 mg to 900 mg of the THC extract.

40) A product comprising a Kavalactone extract comprising Kavalactones comprising two or more of Kavain, dihydroKavain, methysticin, dihydromethysticin, yangonin, and demethoxyyangonin, wherein the Kavalactone extract is an extract of a Noble Kava, wherein the product comprises a beverage, an aerated beverage, a candy, a hard and chewable gummy candy, a confectionary, an effervescent powder or tablet, or a dietary supplement, and wherein the product is edible or drinkable in a form consisting of a solid form, a powder form, a liquid form or mixtures thereof, wherein the product comprises the Kavalactone extract, wherein the Kavalactone extract is formed by contacting the Noble Kava with an extraction agent comprising supercritical CO2 or ethanol, wherein the Kavalactone extract comprises 40% or more by weight of the Kavalactones as measured by HPLC.

41) A composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a material comprising CO2 and/or ethanol extraction method from a selected part of a Noble Kava plant and containing 40% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption.

42) The composition of claim 41, wherein the selected part of the Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

43) The composition of claim 41, wherein material comprises supercritical CO2.

44) The composition of claim 41, wherein the material comprises supercritical CO2 and ethanol.

45) The composition of claim 41, wherein the material consists essentially of supercritical CO2.

46) The composition of claim 41, wherein the material consists essentially of ethanol.

47) The composition of claim 41, wherein the enhanced Noble Kava extract contains 50% or more of the Kavalactone as measured by HPLC.

48) A composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a non-organic solvent from a selected part of a Noble Kava plant and containing 40% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption.

49) The composition of claim 48, wherein the selected part of the Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

50) The composition of claim 48, wherein the non-organic solvent comprises supercritical CO2.

51) The composition of claim 48, wherein the material consists essentially of supercritical CO2.

52) A method of making a composition comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a material comprising CO2 and/or ethanol extraction method from a selected part of a Noble Kava plant and containing 40% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is

safe for human consumption, the method comprising exposing the selected part of the Noble Kava plant to the material and extracting the Noble Kava product.

53) The method of claim 52, further comprising post extraction recovery and/or concentration of the Noble Kava product.

54) The method of claim 52, wherein the selected part of a Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

55) The method of claim 52, wherein material comprises supercritical CO2.

56) The method of claim 52, wherein the material comprises supercritical CO2 and ethanol.

57) The method of claim 52, wherein the material consists essentially of supercritical CO2.

58) The composition of claim 1, wherein the material consists essentially of ethanol.

59) The method of claim 52, wherein the enhanced Noble Kava extract contains 70% or more of the Kavalactone as measured by HPLC.

60) The method of claim 52, wherein the enhanced Noble Kava extract contains 80% or more of the Kavalactone as measured by HPLC.

61) A human edible or drinkable product comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using a material comprising CO2 and/or ethanol extraction method from a selected part of a Noble Kava plant and containing 40% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption, wherein the composition further comprises an additive comprising a tetrahydrocannabinol extract, a cannabidiol extract, a hemp extract or combinations thereof.

62) The product of claim 61, wherein the additive consists essentially of the tetrahydrocannabinol extract.

63) The product of claim 61, wherein the additive consists essentially of the cannabidiol extract.

64) The product of claim 61, wherein the additive consists essentially of the hemp extract.

65) The product of claim 61, wherein the product provides a benefit of reduction in an incidence or severity of anxious feelings or panic sometimes associated with the tetrahydrocannabinol.

66) The product of claim 61, wherein the product is selected from the group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and combinations thereof.

67) The product of claim 66, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a tetrahydrocannabinol extract in the total candy.

68) The product of claim 67, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a cannabidiol extract in the total candy.

69) The product of claim 67, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a hemp extract in the total candy.

70) The product of claim 67, wherein the selected part of the Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

71) The product of claim 61, wherein material comprises supercritical CO2.

72) The product of claim 61, wherein the material comprises supercritical CO2 and ethanol.

73) The product of claim 61, wherein the material consists essentially of supercritical CO2.

74) The product of claim 61, wherein the material consists essentially of ethanol.

75) The product of claim 61, wherein the enhanced Noble Kava extract contains 60% or more of the Kavalactone as measured by HPLC.

76) A human edible or drinkable product comprising an enhanced Noble Kava extract, wherein the enhanced Noble Kava extract comprises a Noble Kava product extracted using CO2 or ethanol from a selected part of a Noble Kava plant and containing 40% or more of a Kavalactone as measured by HPLC, wherein the Noble Kava plant is not a wild type Noble Kava such that the Noble Kava product is safe for human consumption wherein the composition further comprises an additive comprising a tetrahydrocannabinol extract, a cannabidiol extract, a hemp extract or combinations thereof.

77) The product of claim 76, wherein the additive consists essentially of the tetrahydrocannabinol extract.

78) The product of claim 76, wherein the additive consists essentially of the cannabidiol extract.

79) The product of claim 76, wherein the additive consists essentially of the hemp extract.

80) The product of claim 76, wherein the product provides a benefit of reduction in an incidence or severity of anxious feelings or panic sometimes associated with the tetrahydrocannabinol.

81) The product of claim 76, wherein the product is selected from the group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and combinations thereof.

82) The product of claim 81, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a tetrahydrocannabinol extract in the total candy.

83) The product of claim 81, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a cannabidiol extract in the total candy.

84) The product of claim 81, wherein the hard candy, the chewable candy, the beverage or the dietary supplement comprises about 5 mg-950 mg of the enhanced Noble Kava extract in the total candy and about 1 mg-900 mg of a hemp extract in the total candy.

85) The product of claim 81, wherein the selected part of the Noble Kava plant comprises a lower part of the basal stem, rhizomes and/or roots.

86) The product of claim 61, wherein the enhanced Noble Kava extract contains 60% or more of the Kavalactone as measured by HPLC.

87) The product of claim 76, wherein the non-organic solvent comprises supercritical CO2.

88) The product of claim 76, wherein the material consists essentially of supercritical CO2.

89) A method comprising:

a. heating a Noble kava product;
b. optionally homogenizing the Noble kava product; and
c. optionally cooling the Noble Kava product;
d. wherein the method is configured to stabilize the kava product against microbiological decomposition or reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature.

90) The method of claim 89, further comprising packaging of the Noble Kava product, wherein the packaging the kava product comprises an aseptic packaging.

91) The method of claim 89, further comprising adding a processing aid to the Noble Kava product at any stage of the method, wherein the processing aid comprises a substance used in a production of a processed food.

92) The method of claim 91, wherein the processing aid comprises an enzyme.

93) The method of claim 89, wherein the Noble Kava product comprises one or more of:

a. a Noble Kava juice or a Noble Kava root water extract;
b. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;
c. a raw Noble Kava product frozen; and
d. a raw Noble Kava product at room temperature;
e. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

94) The method of claim 89, wherein the heating of the Noble Kava product comprises exposing the Noble Kava product to a pasteurization temperature of 65°C or more.

95) A method comprising:

a. pressurizing the Noble Kava product;
b. optionally homogenizing the Noble Kava product; and
c. optionally cooling the Noble Kava product;
d. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition or reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature.

96) The method of claim 95, wherein the pressurizing the Noble Kava product comprises exposing the kava product to a pressure of about 200 MPa or higher.

97) The method of claim 95, wherein the homogenizing the Noble Kava product comprises homogenizing the Noble Kava product.

98) The method of claim 95, wherein the cooling the Noble Kava product comprises causing the kava product to cool after the heating and the pressurizing of the Noble Kava product.

99) The method of claim 95, further comprising packaging of the Noble Kava product, wherein the packaging the Noble Kava product comprises an aseptic packaging.

100) A method comprising:

a. electrically pulsing the Noble Kava product;
b. optionally homogenizing the Noble Kava product; and
c. optionally cooling the Noble Kava product;
d. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition or reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature.

101) The method of claim 100, wherein the electrically pulsing the Novel Kava product comprises exposing the Noble Kava product to a pulsed electrical field comprising positive and negative pulses.

102) A method comprising:
a. heating a Noble Kava product to a pasteurization or sterilization temperature;
b. optionally homogenizing the Noble Kava product; and
c. optionally cooling the Noble Kava product;
d. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition and prepare a shelf-stable kava product and reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature;
e. wherein the Noble Kava product comprises:
f. a Noble Kava juice or a Noble Kava root water extract;
g. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;
h. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

103) The method of claim 102, wherein the heating the Noble Kava product to a pasteurization temperature comprises exposing the kava product to a temperature of 65°C or more for a period of 0.1 second or more.

104) The method of claim 102, further comprising exposing the Noble Kava product to ionizing radiation.

105) The method of claim 102, further comprising packaging the Noble Kava product, wherein the packaging the Noble Kava product comprises aseptic packaging of the Noble Kava product.

106) A method comprising:

a. heating a Noble Kava product;
b. drying the Noble Kava product;
c. pressurizing the Noble Kava product to a specific pressure optionally with heating;
d. homogenizing the Noble Kava product optionally with heating;
e. optionally cooling the Noble Kava product; and
f. optionally packaging the Noble Kava product, wherein the packaging the Noble Kava product comprises an aseptic packaging;
g. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition, reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature, and prepare a shelf-stable Noble Kava product;
h. wherein the Noble Kava product comprises:
i. a Noble Kava juice or a Noble Kava root water extract;
j. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;
k. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

107) The method of claim 106, wherein the pressurizing the Noble Kava product comprises exposing the kava product to a pressure of 200 MPa or more.

108) The method of claim 106, wherein the cooling the Noble Kava product comprises exposing the Noble Kava product to a flash cooling.

109) A composition comprising a kava particulate suspended in a liquid mixture comprising ethanol, water and glycerin, wherein the kava particulate has a particle size ranging from 0.020 to 2000.0 μm; wherein the liquid mixture is a homogenous mixture.

110) The composition of claim 109, wherein the kava particle comprises two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

111) The composition of claim 109, wherein the particle size of about 1 μm to about 1000 μm; wherein the mixture is alcohol-free, non-alcoholic and/or an aqueous solution.

112) The composition of claim 109, where the composition is mixed with a THC extract and/or a CBD extract.

113) The composition of claim 109, wherein the composition has an aerobic mesophilic plate count of about 8000 cfu/g.

114) The composition of claim 109, wherein the composition has a yeast count less than <10 cfu/g.

115) The composition of claim 109, wherein the composition has a mold count is found to be <10 cfu/g.

116) The composition of claim 109, wherein the composition is in form of a gel; wherein viscosity of the gel decreases at a temperature higher than about 69°C.

117) A method comprising:

a. treating a Noble Kava product;
b. optionally homogenizing the Noble Kava product; and
c. optionally cooling the Noble Kava product;
d. wherein the method is configured to stabilize the Noble Kava product against microbiological decomposition or reduce microbial count in order to improve safety and extend shelf life under refrigeration and/or at ambient temperature.

118) The method of claim 117, wherein the treatment of the noble kava product comprises at least one of pressurizing the Noble Kava product, electrically pulsing the Noble Kava product, heating a Noble Kava product to a pasteurization or sterilization temperature, exposing the Noble Kava product to ionizing radiation or combination thereof.

119) The method of claim117, further comprising packaging of the Noble Kava product, wherein the packaging the Noble Kava product comprises an aseptic packaging.

120) The method of claim 118, wherein the pressurizing the Noble Kava product comprises exposing the kava product to a pressure of about 200 MPa or higher.

121) The method of claim118, wherein the electrically pulsing the Novel Kava product comprises exposing the Noble Kava product to a pulsed electrical field comprising positive and negative pulses.

122) The method of claim 117, further comprising exposing the Noble Kava product to ionizing radiation

123) The method of claim 118, wherein the heating the Noble Kava product to a pasteurization temperature comprises exposing the kava product to a temperature of 65°C or more for a period of 0.1 second or more.

124) The method of claim of claim 117, wherein the cooling the Noble Kava product comprises exposing the Noble Kava product to a flash cooling.

125) The method of claim 117, wherein the Noble Kava product comprises:

a. a Noble Kava juice or a Noble Kava root water extract;
b. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;
c. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

126) A noble kava product comprising: a enhanced kava extract, a THC and/or a CBD, wherein the enhanced kava extract is form of particles size, wherein the particle is ranging from 0.020 to 2000.0 μm.

127) The noble kava product of claim 126, wherein the particle size of about 1 μm to about 1000 μm.

128) The noble kava product of claim 126, wherein the Noble Kava product comprises:

a. a Noble Kava juice or a Noble Kava root water extract;
b. a Noble Kava juice or a Noble Kava root water extract in beverages, aerated beverages, candies, hard and chewable gummy candies, confectionaries, and effervescent powder or tablet and dietary supplement;
c. wherein the Noble Kava product contains two or more of kavain, methysticin, demethoxyyangonin, yangonin, dihydrokavain and dihydromethysticin.

129) A composition comprising a theanine, a vitamin and an enhanced kava extract of a noble kava, wherein the enhanced kava extract is extracted from a selected part of a kava

plant, and wherein the enhanced kava extract contains 50% or more of a pharmacological active kavalactones as measured by HPLC, wherein the kava plant is not a wild type kava such that the enhanced kava extract is safe for human consumption; wherein the enhanced kava extract comprises six major kavalactones that make up greater than 95% of the pharmacological active kavalactones, the six major kavalactones are kavain, dihydrokavain, methysticin, dihydrom-ethysticin, yangonin, and demethoxyyangonin; wherein the noble kava means that the kava plant has a history of safe use and provides an user with an experience of calmness, relaxation and well-being without diminishing cognitive performance or causing other negative side-effects; and wherein the noble kava is sourced from: (1) Federated States of Micronesia, (2) Fiji, (3) Hawaii, (4) Papua New Guinea, (5) Samoa, (6) Solomon Islands, (7) Tonga and/or (8) Vanuatu.

130) The composition of claim 129, wherein the selected part of the kava plant comprises a lower part of basal stems, rhizomes and/or roots.

131) The composition of claim 129, wherein the enhanced kava extract is extracted using a material comprising supercritical CO2 and/or ethanol.

132) The composition of claim 129, wherein the material comprises supercritical CO2 and ethanol.

133) The composition of claim 129, wherein the material consists essentially of supercritical CO2.

134) The composition of claim 129, wherein the material consists essentially of ethanol.

135) The composition of claim 129, wherein the enhanced kava extract contains 60% or more of the pharmacological active kavalactones as measured by HPLC.

136) The Composition of the claim 129, further comprising a cannabinoid.

137) The Composition of the claim 129, wherein the composition is obtained by a method comprising exposing the selected part of the kava plant to a material comprising CO2 and/or ethanol, extracting the enhanced kava extract containing 50% or more of a kavalactone as measured by HPLC, and mixing the enhanced kava extract with theanine.

138) The Composition of claim 129, the method further comprising post extraction recovery and/or concentration of the enhanced kava extract.

139) The Composition of claim 129, wherein the selected part of the kava plant comprises a lower part of basal stems, rhizomes and/or roots.

140) The Composition of claim 129, wherein the material comprises supercritical CO2.

141) The Composition of claim 129, wherein the material comprises supercritical CO2 and ethanol.

142) The Composition of claim 129, wherein the material consists essentially of supercritical CO2.

143) The Composition of claim 129, wherein the material consists essentially of ethanol.

144) The Composition of claim 129, wherein the enhanced kava extract contains 70% or more of the kavalactone as measured by HPLC.

145) The Composition of claim 129, wherein the enhanced kava extract contains 80% or more of the kavalactone as measured by HPLC.

146) The Composition of the claim 129, further comprising a poppy.

147) The Composition of the claim 129, further comprising a cannabinoid and a poppy.

148) The Composition of claim 129, further comprising mixing the enhanced kava extract with a cannabinoid.

149) A human edible or drinkable product comprising an enhanced kava extract obtained from a selected part of a kava plant; wherein A1, A2 and A3, respectively, are amounts of major kavalactones, non-major kavalactones and total kavalactones in the selected part;

wherein A4, A5 and A6, respectively, are amounts of the major kavalactones, the non-major kavalactones and the total kavalactones in the enhanced kava extract:

wherein R1 = A1/A3;

wherein R2 = A2/A3;

wherein R3 = A4/A6;

wherein R4 = A5/A6;

wherein R3 > R1;

wherein R4 < R2;

wherein the major kavalactones consists of kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin; wherein the non-major kavalactones are kavalactones other than the major kavalactones; wherein the enhanced kava extract is extracted from the selected part using a material; wherein the kava plant is not a wild type kava such that the kava human edible or drinkable product is safe for human consumption, wherein the human edible or drinkable product further comprises a tetrahydrocannabinol extract, wherein a ratio of the enhanced kava extract to the tetrahydrocannabinol extract is such that the human edible or drinkable product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the human edible or drinkable product.

150) The human edible or drinkable product of claim 149, wherein the human edible or drinkable product is selected from a group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and a combination thereof.

151) The human edible or drinkable product of claim 149, wherein the selected part of the kava plant comprises a lower part of a basal stem, a rhizome and/or a root.

152) The human edible or drinkable product of claim 149, wherein the material comprises supercritical CO2.

153) The human edible or drinkable product of claim 149, wherein the material comprises supercritical CO_2 and ethanol.

154) The human edible or drinkable product of claim 149, wherein the material consists of supercritical CO_2.

155) The human edible or drinkable product of claim 149, wherein the material consists of ethanol.

156) The human edible or drinkable product of claim 149, wherein the selected part of the kava plant comprises a kava root.

157) The human edible or drinkable product of claim 149, further comprising a cannabidiol extract, wherein a ratio of the enhanced kava extract to the cannabidiol extract is 5 mg to 950 mg of the enhanced kava extract and 1 mg to 900 mg of the cannabidiol extract.

158) A human edible or drinkable product comprising an enhanced kava extract obtained from a selected part of a kava plant;

wherein A1, A2 and A3, respectively, are amounts of major kavalactones, non-major kavalactones and total kavalactones in the selected part;

wherein A4, A5 and A6, respectively, are amounts of the major kavalactones, the non-major kavalactones and the total kavalactones in the enhanced kava extract:

wherein R1 = A1/A3;

wherein R2 = A2/A3;

wherein R3 = A4/A6;

wherein R4 = A5/A6;

wherein R3 > R1;

wherein R4 < R2;

wherein the major kavalactones consists of kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin; wherein the non-major kavalactones are kavalactones other than the major kavalactones; wherein the enhanced kava extract is extracted from the selected part using a material; wherein the kava plant is not a wild type kava such that the kava human edible or drinkable product is safe for human consumption, wherein the human edible or drinkable product further comprises a cannabidiol extract, wherein a ratio of the enhanced kava extract to the cannabidiol extract is such that the human edible or drinkable product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the human edible or drinkable product.

159) The human edible or drinkable product of claim 158, wherein the human edible or drinkable product is selected from a group consisting of a hard candy, a chewable candy, a beverage, a dietary supplement, and a combination thereof.

160) The human edible or drinkable product of claim 158, wherein the selected part of the kava plant comprises a lower part of a basal stem, a rhizome and/or a root.

161) The human edible or drinkable product of claim 158, wherein the material comprises supercritical CO_2.

162) The human edible or drinkable product of claim 158, wherein the material comprises supercritical CO_2 and ethanol.

163) The human edible or drinkable product of claim 158, wherein the material consists of supercritical CO_2.

164) The human edible or drinkable product of claim 158, wherein the material consists of ethanol.

165) The human edible or drinkable product of claim 158, wherein the selected part of the kava plant comprises a kava root.

166) The human edible or drinkable product of claim 149, wherein the ratio of the enhanced kava extract to the tetrahydrocannabinol extract is 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the tetrahydrocannabinol extract.

167) The human edible or drinkable product of claim 149, wherein the ratio of the enhanced kava extract to the cannabidiol extract is 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the t cannabidiol extract.

168) A product comprising: an enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90% pharmacological activity of the kavalactones; and wherein the product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product.

169) The product of claim 168, wherein the kava comprises a noble kava that is sourced from: (1) Federated States of Micronesia, (2) Fiji, (3) Hawaii, (4) Papua New Guinea, (5) Samoa, (6) Solomon Islands, (7) Tonga and/or (8) Vanuatu.

170) The product of claim 168, wherein the enhanced kava extract comprises the kavalactones in an amount of 60% or more by weight of the enhanced kava extract as measured by HPLC.

171) The product of claim 168, wherein the enhanced kava extract comprises the kavalactones in an amount of 70% or more by weight of the enhanced kava extract as measured by HPLC.

172) The product of claim 168, wherein the enhanced kava extract comprises the kavalactones in an amount of 80% or more by weight of the enhanced kava extract as measured by HPLC.

173) The product of claim 168, wherein the enhanced kava extract is obtained from a selected part of a kava plant, wherein the selected part comprises a lower part of a basal stem, a rhizome and/or a root.

174) The product of claim 168, further comprising fruit juice, theanine and milk thistle.

175) The product of claim 168, further comprising fruit juice, theanine and vitamin B.

176) The product of claim 168, further comprising vitamin B.

177) The product of claim 168, further comprising magnesium.

178) The product of claim 168, further comprising lemon.

179) The product of claim 168, further comprising fruit juice, theanine, magnesium, vitamins, vitamin B, lime, lemon, milk thistle, or combinations thereof.

180) The product of claim 168, further comprising sugar, a sugar substitute, a sugar free substitute, a corn syrup, a high fructose corn syrup, lime, lemon, a citrus fruit, a citrus fruit juice, a rice syrup, an alcoholic beverage, gelatin, malt, a sodium salt, a potassium salt, a food color, a food flavor, a natural flavor, a preservative, a nut, an extract from a nut, or combinations thereof.

181) A product comprising: (a) an enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90%

pharmacological activity of the kavalactones; (b) a tetrahydrocannabinol (THC) extract; and (c) a cannabidiol (CBD) extract; wherein the product contains 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the tetrahydrocannabinol extract, wherein the product contains 5 mg to 950 mg of the enhanced kava extract to 1 mg to 900 mg of the cannabidiol extract, wherein the product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product, and wherein the extraction media comprises an alcohol, a mixture of alcohols, supercritical CO2, or a mixture of alcohols and supercritical CO2, and the solvent comprises a non-organic solvent.

182) The product of claim 181, wherein the kava comprises a noble kava that is sourced from: (1) Federated States of Micronesia, (2) Fiji, (3) Hawaii, (4) Papua New Guinea, (5) Samoa, (6) Solomon Islands, (7) Tonga and/or (8) Vanuatu.

183) The product of claim 181, wherein the tetrahydrocannabinol extract or the cannabidiol extract is obtained from hemp, hemp stalk, hemp stem, hemp seed, cannabis, cannabis zstalk, cannabis stem, cannabis seed, cannabis flower or combinations thereof.

184) The product of claim of 181, wherein the product comprises a beverage, an aerated beverage, a candy, a confectionary, an effervescent powder or tablet, a dietary supplement or combinations thereof.

185) The product of claim of 181, wherein the product is in a solid form, a powder form, a paste form or a liquid form.

186) The product of claim of 181, wherein the product to be selected from a group consisting of a beverage, an aerated beverage, a candy, a confectionary, an effervescent powder or tablet, or a dietary supplement.

187) The product of claim 181, wherein the product is in a solid form, a powder form, a paste form or a liquid form.

188) The product of claim 181, wherein the extraction media comprises an alcohol, a mixture of alcohols, supercritical CO2, or a mixture of alcohols and supercritical CO2, and the solvent comprises a non-organic solvent.

189) The product of claim 181, wherein the enhanced kava extract comprises the kavalactones comprising the kavain, the dihydrokavain, the methysticin, the

dihydromethysticin, the yangonin and the demethoxyyangonin that constitute greater than 95% pharmacological activity of the kavalactones.

190) An enhanced kava extract obtained from kava by contacting the kava with an extraction media or a solvent, the enhanced kava extract comprising kavalactones comprising kavain, dihydrokavain, methysticin, dihydromethysticin, yangonin and demethoxyyangonin that constitute greater than 90% pharmacological activity of the kavalactones; and wherein the product provides relief from anxiety, lowers a sense of panic and serves as a relaxant to provide calming benefits, to produce a state of calmness, relaxation and well-being, and to provide relief from nausea to a person consuming the product.

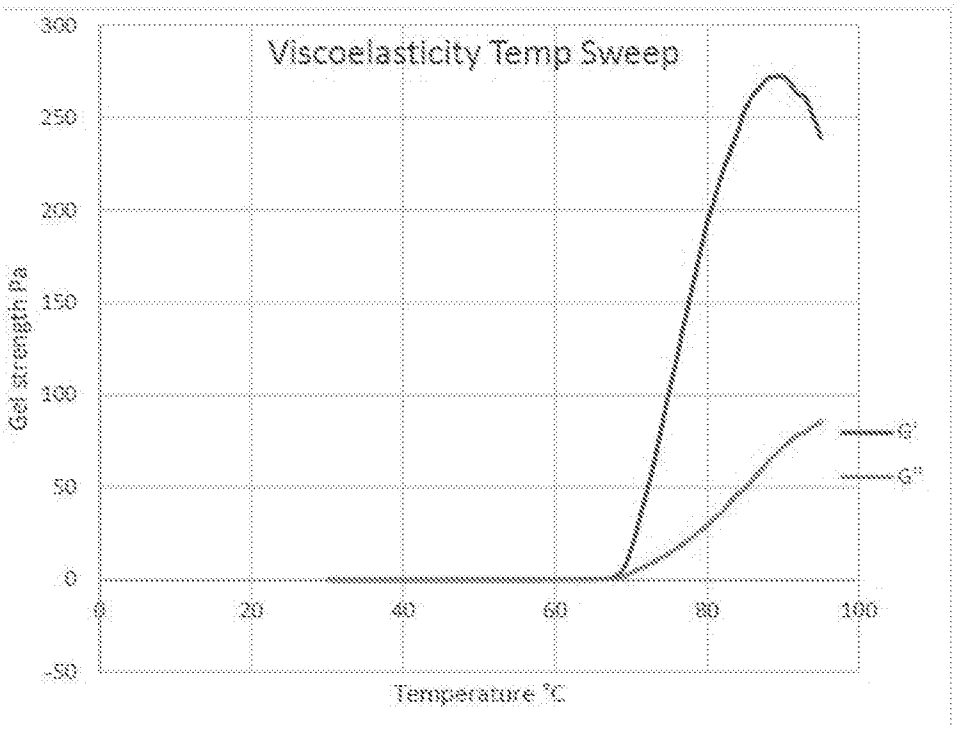
191) The enhanced kava extract of claim 190, wherein the kava comprises a noble kava that is sourced from: (1) Federated States of Micronesia, (2) Fiji, (3) Hawaii, (4) Papua New Guinea, (5) Samoa, (6) Solomon Islands, (7) Tonga and/or (8) Vanuatu.

192) The enhanced kava extract of claim 190, wherein the enhanced kava extract comprises the kavalactones in an amount of 60% or more by weight of the enhanced kava extract as measured by HPLC.

193) The enhanced kava extract of claim 190, wherein the enhanced kava extract comprises the kavalactones in an amount of 70% or more by weight of the enhanced kava extract as measured by HPLC.

194) The enhanced kava extract of claim 190, wherein the enhanced kava extract comprises the kavalactones in an amount of 80% or more by weight of the enhanced kava extract as measured by HPLC.

195) The enhanced kava extract of claim 190, wherein the enhanced kava extract is obtained from a selected part of a kava plant, wherein the selected part comprises a lower part of a basal stem, a rhizome and/or a root.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Gel strength Pa
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-50
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Fig. 1

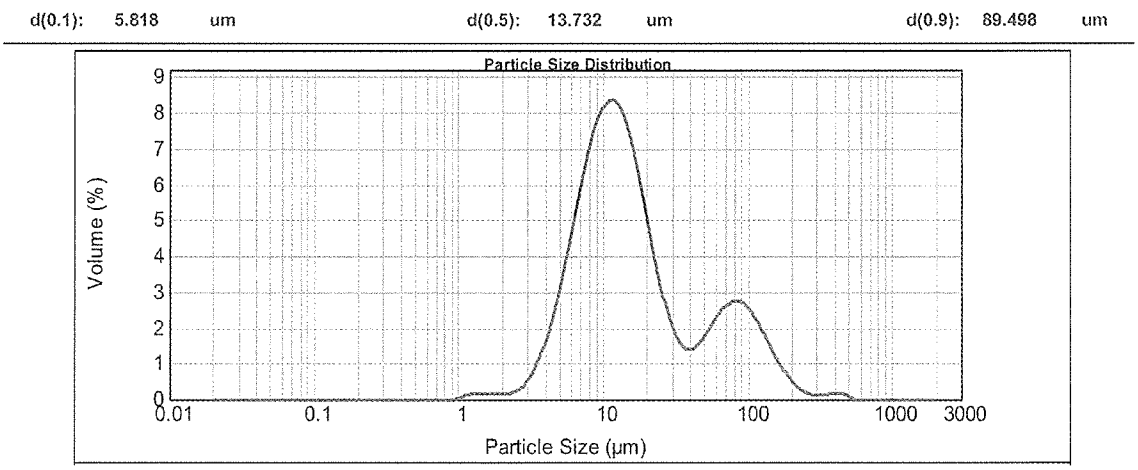
d(0.1): 5.818 um
d(0.5): 13.732 um
d(0.9): 89.498 um
Particle Size Distribution
Volume (%)
9
8
7
6
5
4
3
2
1
0
0.01
0.1
1
10
100
1000
3000
Particle Size (µm)

Fig. 2

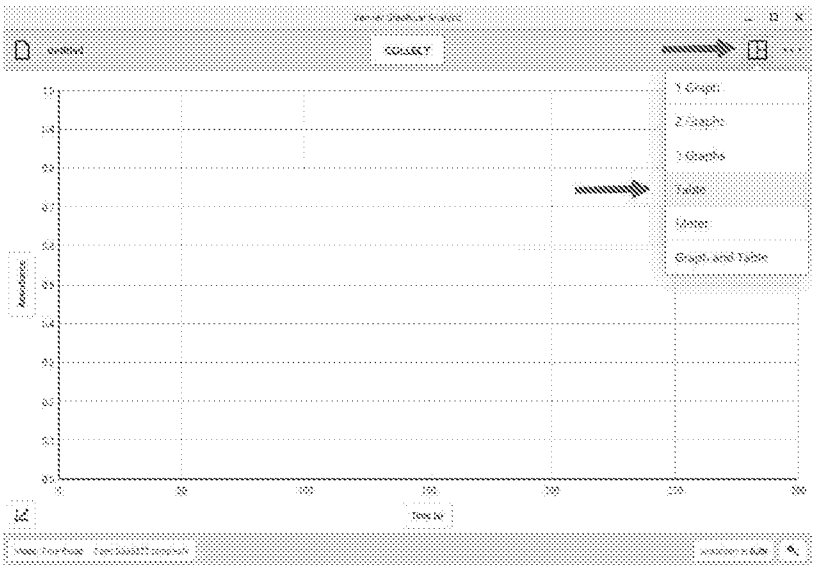

Fig. 3

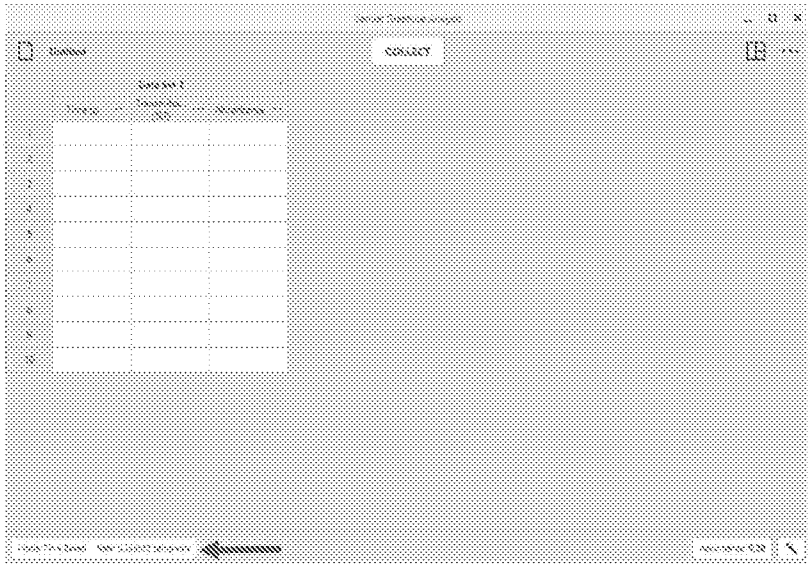

Fig. 4

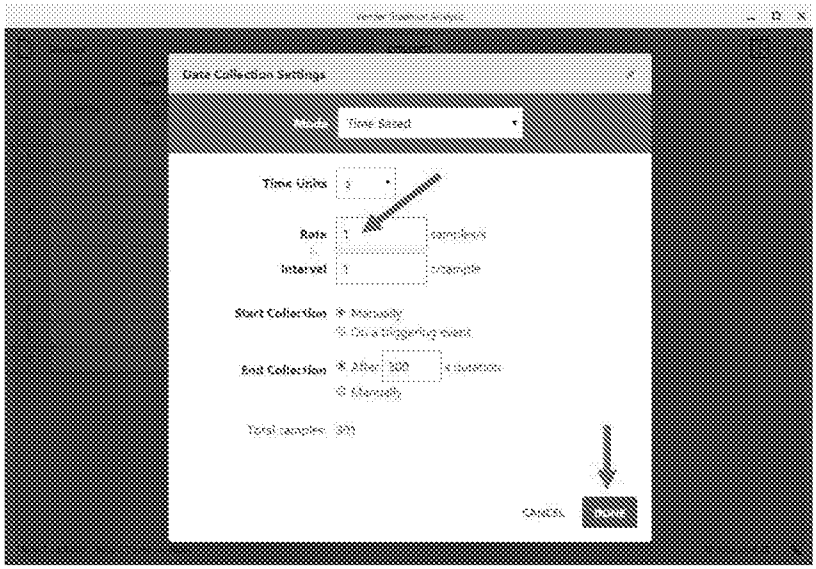
Data Collection Settings
Mode
Time Based
Time Units
Rate
Interval
Start Collection
Manually
End Collection
Manually
Total samples
Cancel
Start

Fig. 5


430 nm
470 nm
565 nm
635 nm
CAL

Fig. 6

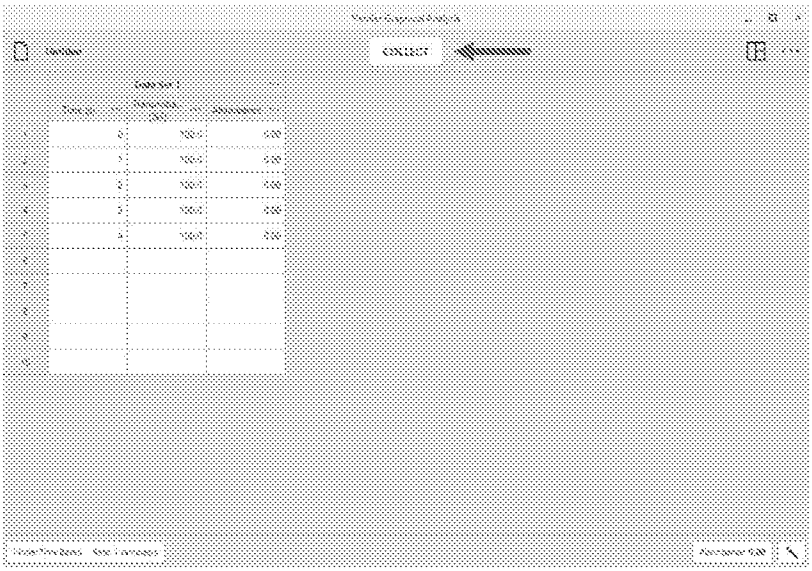

Fig. 7

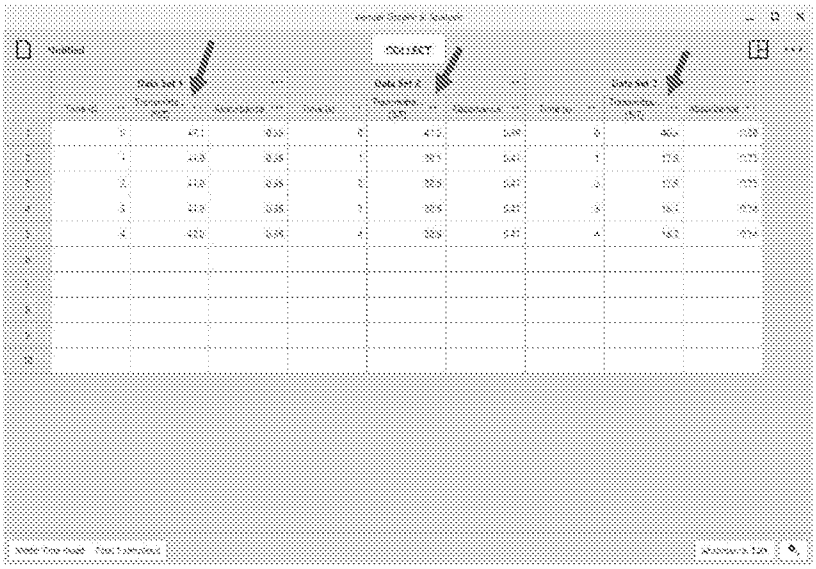

Fig. 8

	A	B	C	D
1	Sample #	470nm	565nm	Value
2	1	41.9	89.8	47
3	2	38.5	89.3	43
4	3	17.8	88.7	20
5	4	6.2	65.1	10

Fig. 9

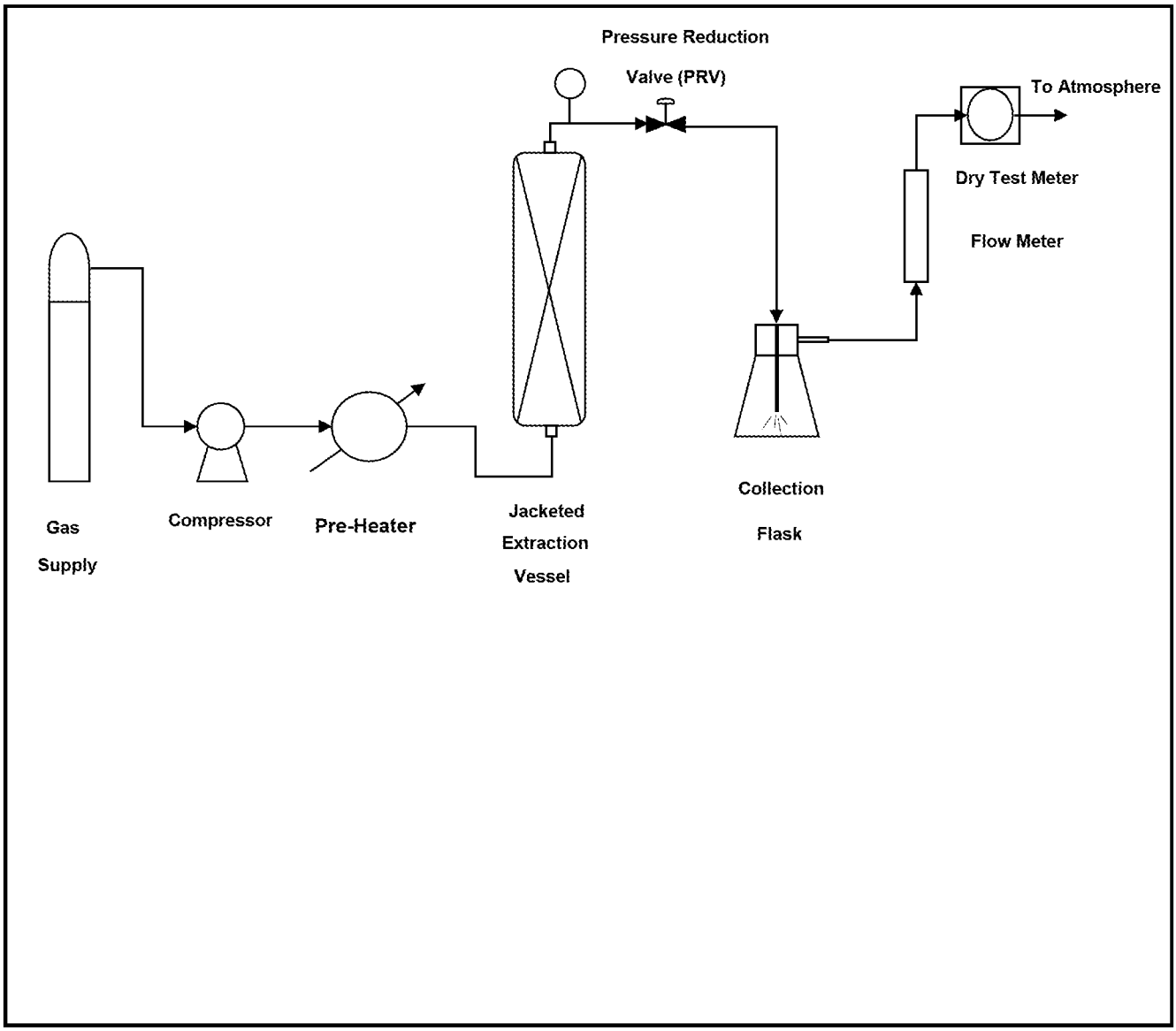
Pressure Reduction
Valve (PRV)
To Atmosphere
Dry Test Meter
Flow Meter
Gas
Supply
Compressor
Pre-Heater
Jacketed
Extraction
Vessel
Collection
Flask

Fig. 10

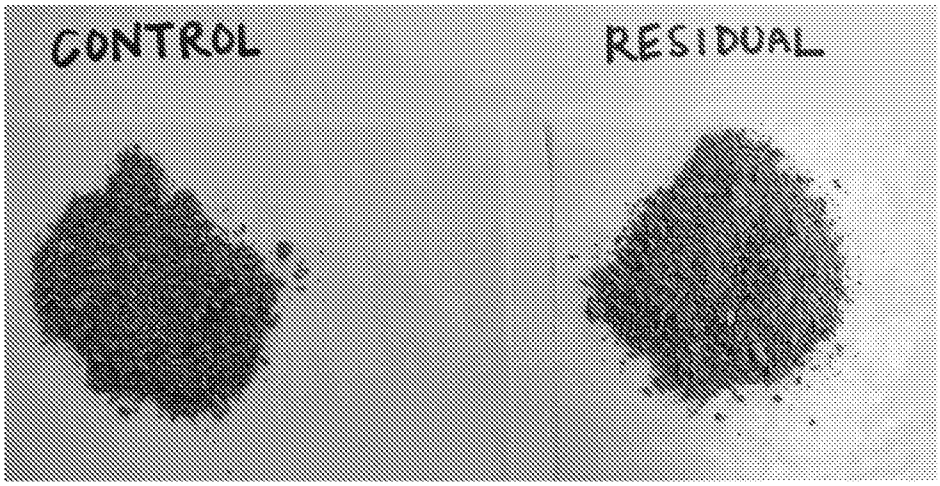

Fig. 11

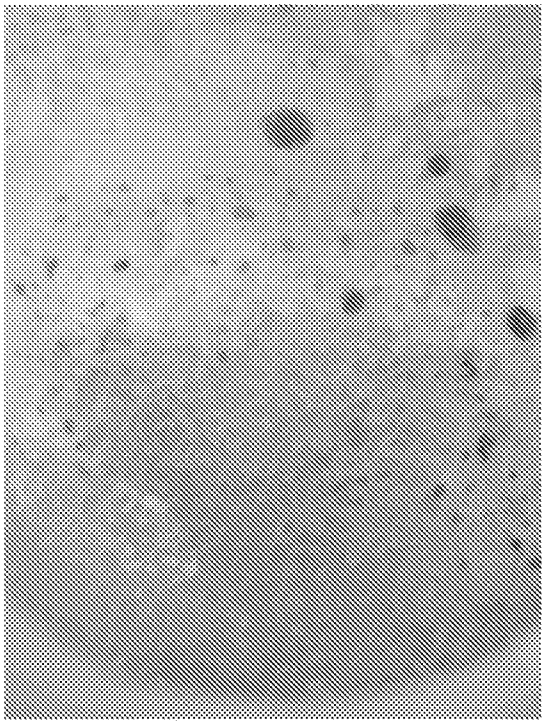

Fig. 12

Fig. 13

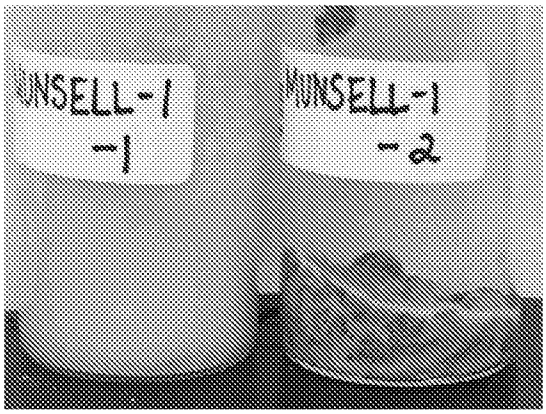

Fig. 14

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/047345

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23G3/48 A23G4/06 A23L2/52 A23L33/105
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23G A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ADELE MURAUER ET AL: "Abstract", PLANTA MEDICA, vol. 83, no. 12/13, 17 January 2017 (2017-01-17), pages 1053-1057, XP055760412, DE ISSN: 0032-0943, DOI: 10.1055/s-0043-100632 table 2 page 1055, right-hand column, paragraph 1 - page 1056, left-hand column, paragraph 1 Results and Discussion; page 1054, left-hand column, paragraph 3 ----- -/--	1-6, 22-30

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 December 2020	13/01/2021

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Granet, Nicolas

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/047345

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TRAN DANG XUAN ET AL: "Efficacy of extracting solvents to chemical components of kava (Piper methysticum) roots", JOURNAL OF NATURAL MEDICINES, vol. 62, no. 2, 28 November 2007 (2007-11-28), pages 188-194, XP055760476, JP ISSN: 1340-3443, DOI: 10.1007/s11418-007-0203-2 Materials and Methods; table 2 -----	1-6, 22-30

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2020/047345

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 7-21, 31-195
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 7-21, 31-195

A meaningful search is not possible on the basis of the claims as presently formulated.
Although claims 1,7,40,41,48,61,76,109,126,129,149,158,168,181 and 190 (product type claims) and 22,52,89,95,100,106,109 and 117 (method type claims) have been drafted as separate independent claims, they appear to relate effectively to similar and/or overlapping subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.
Claims 1,7,40,41,48,61,76,109,126,129,149,158,168,181,190 (product) and 22,52,89,95,100,106,109,117 (method) respectively , are each only partly overlapping in scope and cannot be seen as alternative solutions for the same problem,
There is no clear distinction between the independent claims because of overlapping scope. The claims are drafted in such a way that the claims as a whole are not in compliance with the provisions of clarity and conciseness of Article 6 PCT, as it is particularly burdensome for a skilled person to establish the exact subject-matter for which protection is sought. The non-compliance with the substantive provisions is such that the search will be performed taking into consideration the non-compliance in determining the extent of the search (PCT Guidelines 9.19 9.23 and 9.25).
With letter of 30-11-2020, the applicant was invited to indicate the claims on which the search is to be carried out.
With letter of 14-12-2020, the applicant replied that he wanted the search to be carried out on all the independent product claims and further indicated that those claims were clear without further reasoning.
As already explained in the PCT informal clarification, those claims lack conciseness as the thus formulated claims render unduly burdensome to determine the matter for which protection is sought. Therefore, the applicant's request cannot be followed, since the selection of claims made by the applicant does not solve the clarity problem already raised in the informal clarification. Consequently, the search has be performed on the first independent claim in each category, i.e. claims 1 and 22 as well as dependent claims 2-6 and 22-30. Unsearched subject-matter must later be deleted from the application, and may not be re-introduced.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) PCT declaration be overcome.