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(54) **Title:** A PROCESS FOR PRODUCTION OF AN ALCOHOLIC BEVERAGE FROM CASHEW APPLE AND RAISINS AND THE ALCOHOLIC BEVERAGE PRODUCED THEREOF

(57) **Abstract:** A process for production of an alcoholic beverage comprising the steps of preparing an inoculum of yeast, pretreating cashew apples and raisins, crushing the pretreated cashew apples and raisins to obtain cashew apple juice and raisin juice, removing tannins from the cashew apple juice, mixing the cashew apple juice with the raisin juice to obtain a juice mix having a sugar content of 20-30 Brix, fermenting the juice mix with the yeast inoculum for 20-30 days to obtain the alcoholic beverage, reducing the malic acid content of the alcoholic beverage by malolactic fermentation for 15-25 days, and, filtering the alcoholic beverage using fining agents.

### **Field of the invention**

The present invention relates to an alcoholic beverage and a process for  
5 production of the alcoholic beverage from cashew apple and raisins. Particularly,  
the present invention relates to wine and a process for production of wine from  
cashew apple and raisins.

### **Background of the invention**

10 Cashew is composed of two parts: the nut and the peduncle (cashew  
apple), which is underutilized. The product of greater economic expression is the  
nut, which is a highly sought after for its nutritional value, taste and aroma.  
Cashew apple is a pseudo-fruit, rich in reducing sugars (fructose and glucose),  
vitamins, minerals and some amino acids. Although cashew apples can be  
15 consumed as juice, ice cream and other foodstuffs, the consumption of fruits is  
very much limited. More than 90% of the cashew apple is being wasted. A small  
portion is used for the production of "Fenni" a distilled alcoholic spirit in Goa,  
India. As such, cashew apples are considered an agriculture residue.

20 Cashew apples are rich source of carbohydrates, minerals, vitamins,  
amino acids, carotenoids, phenolics, organic acids, and antioxidants and  
considered as source of energy. The cashew apple is an excellent source of  
ascorbic acid (averaging 200-275 mg/100 ml of juice), which is about five to  
seven times that of orange juice. It is also a rich source of Vitamin A precursors.

25 Several attempts were made in Brazil, India, Nigeria etc. to find uses of  
cashew apple. Cashew apple wine, Cashew apple "functional food", Cashew  
apple health drink, feed stock for prebiotics production are some of the potential  
technologies for the use of cashew apple.

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Besides possessing nutritional properties, these are not consumed like other fruits due to astringency. Astringency is due to polyphenols, tannins (0.35%), and unknown oily substances (3%) present in the waxy layer of the skin. The binding of tannins to salivary glycoproteins develops astringent taste.

5 Leucodelphinidin, the major polyphenolic compound and other phenolic acids (gallic acid, protocatechuic acid, conjugate cinnamic acid, and free cinnamic acid) are found in cashew apple juice. During preservation, the unstable polyphenols undergo chemical and biochemical reactions, and result in browning. Polyphenol oxidase (PPO) catalyses the oxidation of polyphenols to

10 quinones which undergo non-enzymatic reactions with proteins and carbohydrates to produce brown colored compounds, melanins. Such browning reactions are detrimental to nutritional quality and change sensory attributes. Further, tannins interfere with the assimilation of proteins in the body, resulting in nutritional deficiency. Further, the sugar content in the cashew apple juice is low

15 and varies between 6-10 %(w/v). Thus addition of sucrose (table sugar) is necessary to increase the Brix (gm of sucrose in 100gm of solution) of the juice, so as to make it fit for wine fermentation. Additionally, it is necessary to add ammonium phosphate and magnesium sulfate to meet the nutritional requirement of yeast during fermentation.

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Conventional cashew apple wine is cheaper to produce but is harsher in taste and has some degree of astringency due to the presence of various polyphenols (even after tannin removal treatment). Also, due to the presence of 2-methyl butanoic acid and related compounds, wine gets an unpleasant sweaty

25 odor. Further it was observed that the characteristic fruit flavors fade very rapidly during storage, which makes it difficult for the manufacturer to offer consistent quality to the consumer all the time. Further, conventional cashew apple wine lacks the fine translucent red/transparent colour. More importantly, the sweet, fruity, cashew like aroma which lacks the body (perceived "weight"-the sensation

30 of fullness, when tasted) and palate (combined feeling of mouth and nose, when

tasted) as compared to the traditional grape wine made, makes it less appealing to the consumer. Thus, cashew apple continues to be considered as an agricultural waste.

5           Straw wine, or raisin wine, is a wine made from grapes that have been dried to concentrate their juice. The classic method dries clusters of grapes on mats of straw in the sun, but some regions dry them under cover, some hang up the grapes, and the straw may be replaced by modern racks. The main effect of drying grapes is the loss of water and the consequent concentration of sugars.  
10       Raisins contain 6-8 times more sugar than grapes. The "total acidity", polyphenol, phenolic acid, and tannin content also increases due to drying. Protocatechuic and oxidized cinnamic acids, are present at a higher level in raisins compared to grapes. Raisins are rich in anthocyanins, which are strong anti oxidants. Another important phytochemical Resveratrol is found in large  
15       quantity in raisins. Resveratrol is a known to have several beneficial effects including anti cancer, anti inflammatory and anti oxidant properties.

Raisin (Straw) wine available in the market is expensive and much sweeter in taste. Often these wines are nutty in taste. These wines lack any appreciable  
20       quantity of vitamins. Further, these wines tend to be particularly high in "volatile acids", a direct result of drying. The acetic acid of such wine may well exceed legal levels, sometimes entailing unacceptably high sulfur dioxide additions (Reference-The oxford companion to wine by Jancis Robinson, third edition, Oxford University Press).

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Thus, there is a need to remove the drawbacks of conventional cashew apple and raisin wines. There is also a need to utilize cashew apples so as to provide additional remuneration to the cashew apple farmers. Further, there is a  
30       need to utilize all the nutritional attributes of cashew apple and raisins and

provide a wine which is pleasant in taste, cheaper and meets all the criteria of a good quality wine.

### Summary of the Invention

5           According to an embodiment the present invention provides a process for production of an alcoholic beverage comprising the steps of preparing an inoculum of yeast, pretreating cashew apples and raisins, crushing the pretreated cashew apples and raisins to obtain cashew apple juice and raisin juice, removing tannins from the cashew apple juice, mixing the cashew apple  
10 juice with the raisin juice to obtain a juice mix having a sugar content of 20-30 Brix, fermenting the juice mix with the yeast inoculum for 20-30 days to obtain the alcoholic beverage, reducing the malic acid content of the alcoholic beverage by malolactic fermentation for 15-25 days, and, filtering the alcoholic beverage using fining agents.

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          According to an embodiment the present invention further provides an alcoholic beverage produced using the process.

          According to an embodiment the alcoholic beverage comprises ethyl  
20 alcohol, sulfur dioxide, copper, iron, nickel, chromium, manganese, zinc, vitamin C and antioxidants.

          According to a preferred embodiment, the invention provides an alcoholic beverage comprising ethyl alcohol % (v/v) in the range of 10.5-14.5, sulfur  
25 dioxide mg/ L max. in the range of 50-100, copper mg/L max. in the range of 0-0.05, iron, mg/L max. in the range of 0.5-1.5, nickel mg/L max. in the range of 0-0.080, chromium mg/L max. in the range of 0.50-0.75, manganese mg/L max. in the range of 0.05-0.075, zinc mg/L max. in the range of 0.05-0.15, vitamin C, mg/L in the range of 300-800, and antioxidant activity mM TE/ L in the range of  
30 2.0-2.4.

### Detailed Description of the Invention

The present invention will now be described in detail with respect to the detailed description provided below.

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Various embodiments of the present invention provide a process of preparation of an alcoholic beverage and the alcoholic beverage produced by the process.

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According to an embodiment the present invention provides a process for production of an alcoholic beverage. The process comprises the steps of preparing an inoculum of yeast, pretreating cashew apples and raisins, crushing the pretreated cashew apples and raisins to obtain cashew apple juice and raisin juice, removing tannins from the cashew apple juice, mixing the cashew apple juice with the raisin juice to obtain a juice mix having a sugar content of 20-30 Brix, fermenting the juice mix with the yeast inoculum for 20-30 days to obtain the alcoholic beverage, reducing the malic acid content of the alcoholic beverage by malolactic fermentation for 15-25 days, and, filtering the alcoholic beverage using fining agents.

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According to another embodiment, the yeast is non-limitingly selected from *Saccharomyces cerevisiae*, *Saccharomyces pastorianus*, *Saccharomyces uvarum*, *Saccharomyces ellipsoideus*, *Saccharomyces bayanus* and *Saccharomyces paradoxus*.

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However, any other yeast can be used for production of ethanol. Any other micro-organisms apart from yeasts which meet the requirement of production of ethanol may be employed and are within the scope of the present invention.

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According to an exemplary embodiment, the yeast is *Saccharomyces cerevisiae*.

According to yet another embodiment, the malolactic fermentation is carried out using bacteria selected from *Oenococcus*, *Lactobacillus* and *Pediococcus*.

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According to an exemplary embodiment, the bacteria are *Oenococcus oeni*.

The main purpose of the malolactic fermentation is to reduce the malic acid content provided by fermentation of raisins. Use of other micro-organisms or any other techniques to reduce the malic acid content of the alcoholic beverage may be apparent to a person skilled in the art and lie within the ambit of the present invention.

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According to a further embodiment, the pretreatment of cashew apples comprises sanitization of cashew apples using any one of steam (for 2-5 minutes), chlorinated water, quaternary ammonium compounds and hypochlorite solution. Preferably, the pretreatment of cashew apples comprises treatment with 2-5%, more preferably with 3% chlorinated water.

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According to another embodiment, the choice of raisins can be made based upon the wine style and quality. If red cashew apple wine is desired, raisins non-limitingly selected from *Cabernet Franc*, *Shiraz*, *Cabernet Sauvignon*, *Merlot*, *Zinfandel*, *Pinot Noir* can be used. If white wine is desired, raisins non-limitingly selected from *Chardonnay*, *Chenin Blanc*, *Pinot Blanc*, *Sauvignon Blanc*, *Viognier* can be taken.

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According to yet another embodiment, the pretreatment step of raisins comprises steeping raisins in hot water for 1-45 minutes. Preferably the raisins are steeped in boiling water for 10-30 minutes. More preferably, the raisins are

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steeped in water at 85-105°C for 15-25 minutes. The duration of steeping and temperature are two important parameters, which determines the colour, aroma and taste of the final product.

5           According to a further embodiment, tannins are removed from the cashew apple juice by using any one or more of isinglass, egg white, casein, gelatin, starch, sago, celite and polyvinyl pyrrolidone. Isinglass, egg white, casein and gelatin are used along with heat treatment. Heating was necessary to hasten the process of complexation between tannins and added proteins.

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          According to an exemplary embodiment, tannins are removed from the cashew apple juice by adding 4-6% gelatin (w/v) and heating at a temperature of 80-120° C for 10-30 minutes.

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          According to another embodiment, after the step of removing tannins, the cashew apple juice and after the step of malolactic fermentation the alcoholic beverage is optionally stabilized using potassium metabisulfite or sodium metabisulfite. Any other methods of stabilization, known to a person ordinarily skilled in the art can be employed to halt the growth of unwanted micro-

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          According to a further embodiment, the mixing step is optionally followed by the step of adjusting the pH to 3-4 using tartaric acid. Preferably, the pH is adjusted to 3.5.

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          According to another embodiment, the juice mix is fermented with the yeast inoculum at a temperature of 10-20° C for 20-30 days. Preferably, the juice mix is fermented with yeast at a temperature of 16° C for 25-30 days.

According to still another embodiment, the malolactic fermentation of the alcoholic beverage is carried out at a temperature of 10-20° C for 15-25 days. According to a preferred embodiment, the malolactic fermentation of the alcoholic beverage is carried out at a temperature of 16° C for 20-25 days.

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According to an embodiment, the fining agents for coagulation and facilitating subsequent filtration are selected from amongst bentonite powder, celite, egg white, casein and isinglass.

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According to a further embodiment, the alcoholic beverage is bottled and stored at a controlled temperature according to conventional technologies known to a person ordinarily skilled in the art.

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According to an embodiment the present invention further provides an alcoholic beverage produced using the process.

According to an embodiment the alcoholic beverage comprises ethyl alcohol, sulfur dioxide, copper, iron, nickel, chromium, manganese, zinc, vitamin C and antioxidants.

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According to an embodiment, the invention provides an alcoholic beverage comprising ethyl alcohol % (v/v) in the range of 10.5-14.5, sulfur dioxide mg/ L max. in the range of 50-100, copper mg/L max. in the range of 0-0.05, iron, mg/L max. in the range of 0.5-1.5, nickel mg/L max. in the range of 0-0.080, chromium mg/L max. in the range of 0.50-0.75, manganese mg/L max. in the range of 0.05-0.075, zinc mg/L max. in the range of 0.05-0.15, vitamin C, mg/L in the range of 300-800, and antioxidant activity mM TE/ L in the range of 2.0-2.4.

According to another embodiment, the alcoholic beverage has volatile acids in g/L in the range of 0.3-1.1, total acidity in g/L in the range of 6-10.5, residual reducing sugars in the range of 1-30 and pH between 3.5 to 3.9.

5 According to a further embodiment, the alcoholic beverage produced using the above method is carbonated. The addition of carbon dioxide can be achieved by known techniques of internal secondary fermentation or force-injection. Any other techniques known to a person skilled in the art can also be used to achieve carbonation. The resulting alcoholic beverage contains about  
10 3.92-4.25 g of Carbon dioxide per liter.

According to another embodiment, to the alcoholic beverage produced using the above method are added powdered dry herbs such as  
15 cloves, cinnamon, cardamom, pimento, coriander, marjoram, chamomile, hyssop, ginger, nutmeg, mace, pepper etc. and stirred for suitable time, until the flavors gets dissolved in the wine. Then the insoluble materials are removed by filtration and the wine is bottled.

According to yet another embodiment, the wine produced using  
20 the above method is optionally subjected to fortification and aging. Additional quantity of odorless alcohol (cashew apple alcohol or any suitable alcohol) to make it strong. After pasteurization, this wine is stored in wooden barrels/ glass bottles for 12 months or more, for aging. During this process, young wine loses its raw and harsh flavor and acquires desirable palate and bouquet.

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## **Examples**

### **Example 1**

30 *Preparation of Wine*

**A. Preparation of inoculum of yeast**

2g of wine yeast (*Saccharomyces cerevisiae*) was mixed in 20 ml sterile water and incubated at 20-30°C for about 20 minutes. This rehydrated the yeast cells. Then it was mixed with 5-6 ml of raisin juice and was incubated for another 30 minutes to activate the yeast cells. The resulting inoculum was sufficient for fermenting 1 liter juice mix.

**B. Preparation of inoculum of lactic acid bacteria**

The seed for the malolactic fermentation called the inoculum was prepared by mixing 5g of *Oenococcus oeni* in 40 ml sterile water and incubated at 20-30°C for about 20 minutes. This will rehydrate the bacterial cells. Then it was mixed with 20 ml of raisin juice and was incubated for another 30 minutes to activate the bacterial cells. The resulting inoculum was sufficient for 10 liter wine.

**C. Pretreatment of cashew apples and raisins**

Fully ripened cashew apple fruits collected from the farm were washed to remove adhering dirt and extraneous materials. Then fruits were sanitized by washing with 3 % (w/v) chlorinated water and crushed in a blender. Fruit juice was extracted from the fruit pulp by squeezing. The fruit juice available will be highly astringent due to the presence of high concentration of tannins. Tannins were removed from the juice by gelatin treatment. The fruit juice was added with Gelatin (4-6 % (w/v)) and heated to 100° C for 20 minutes. Then the juice was cooled and was kept undisturbed for several hours to facilitate sedimentation. After complete sedimentation, clear juice was decanted. The clear liquid was mixed with Potassium metabisulfite at the concentration of 50 ppm and stored in airtight containers at 4°C till further use.

Fully dried *Cabernet Sauvignon* raisins were mixed with double the portion of boiling water (w/w) and kept for steeping for 15-25 minutes. Then the

steeped raisins were crushed gently and the juice was extracted from the fruit pulp.

5 The steeping temperature and time was optimized by full factorial search method for *Cabernet Sauvignon* raisins sourced from Sangli, Maharashtra. The temperature was fixed at 85, 95 and 102° C and code named as T1, T2 and T3. The time of steeping was fixed at 15, 20, 25 and 30 minutes, code named as t1, t2, t3 and t4. The data can be found in Table 1 below.

10 From these experiments it was clear that, steeping at 95°C for 15-25 minutes would give an intense bright red colored juice, with desirable odor without any mold growth. However, the sugar extraction was maximum at 25-30 minutes steeping. It was concluded that a steeping regime of 95°C for 25 minutes is ideal for *Cabernet Sauvignon* raisin sourced from Sangli, Maharashtra.

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After steeping at the desired temperature-time regime, the raisins were crushed gently and kept at 16° C for 1 week. Then the juice is extracted from the skin/ broken raisins. The Brix was checked and added to the clarified cashew-apple juice to get the desired Brix. The pH of the mixture was adjusted to 3.5 by  
20 adding appropriate amount of Tartaric acid.

The must quality was assessed after 1 week (before adding to cashew-apple juice) in terms of color, residual sugar, mold growth and odor. Based upon the result, the wine is allowed to continue or discarded.

Table 1 - Steeping conditions

Parameter	T1 x t1	T1 x t2	T1 x t3	T1 x t4	T2 x t1	T2 x t2	T2 x t3	T2 x t4	T3 x t1	T3 x t2	T3 x t3	T4 x t4
Color	Light	Light	Light	Light	Intense Bright	Intense Bright	Intense Bright	Intense Bright	Intense Bright	Intense Dull	Intense Dull	Intense Dull
Brix	22	24	25.2	31	31	32.2	34.1	34.1	33	34.1	34.2	34.1
Mold growth	Positive	Positive	Positive	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Odour	Vinous, nutty	Vinous nutty	Vinous nutty	Vinous nutty	Vinous nutty	Vinous nutty	Vinous nutty	Nutty Burnt	Nutty burnt	Nutty Burnt	Nutty Burnt	Nutty Burnt

#### **D. Preparation of alcoholic beverage**

The juice from Raisins was mixed with appropriate quantity of cashew apple juice so as to get the appropriate sugar content 22-24 Brix. The pH of the mixture was adjusted to 3.5 by adding appropriate quantity of Tartaric acid crystals (not exceeding 6.5 g/L). One liter of this juice mix was added with the prepared inoculum and allowed to ferment at 16°C for 20-30 days or till the fermentation stops. The fermentation was carried out in containers having air-lock, so that atmospheric oxygen does not come in contact with the fermenting juice. The end of fermentation was recognized by the absence of any effervescence or the constant value of Brix. The wine produced was filtered and mixed with *Oenococcus oeni* inoculum to carry out malolactic fermentation. Malolactic fermentation was carried out for 21 days at 16°C. After the completion of malo-lactic fermentation, Bentonite powder was added. The wine was filtered using a fine filter set up and the clear wine was mixed with Potassium metabisulfite at the concentration of 50 ppm and bottled.

#### **Example 2**

*Characteristics of the alcoholic beverage*

##### **A. Composition of the alcoholic beverage**

The alcoholic beverage obtained by the process described herein is as provided in Table 2 below.

**Table 2- Quality attributes**

Sr. No.	Characteristics measured	Values	BIS specification
1.	Ethyl alcohol % (v/v)	12.5	10.5-15.0
2.	Total acidity as Tartaric acid, g/ L	7.05	4.0- 15.0
3.	Volatile acidity as acetic acid, g/L, max.	1.08	1.3
4.	Sulfur dioxide, mg/ L max.	60	350
5.	Residual reducing sugar g/ L max.	26	150

6.	Presence of methyl alcohol	Negative	Must be negative
7.	Copper, mg/L max.	0	5
8.	Iron, mg/L max.	0.537	15
9.	Nickel, mg/L max.	0065	-
10.	Chromium, mg/L max.	0.513	-
11.	Manganese, mg/L max.	0.061	-
12.	Zinc, mg/L max.	0.05	-
13.	Vitamin C (Ascorbic acid), mg/L	385	-
14.	pH	3.8	-
15.	Antioxidant activity, mM TE/ L	2.4	-

### **B. Sensory Evaluation of the alcoholic beverage**

Sensory evaluation of Cashew apple wine, raisin (*Cabernet Sauvignon*) wine and cashew-apple-raisin (*Cabernet Sauvignon*) wine was conducted in the lab.

- 5 The wines were examined after allowing the wine to breathe for 30 min. at 16°C. All the four were coded and were blind tasted (in duplicate) and rated on hedonic and characteristic charts as per modified UC Davis method, the results of which are given in Table 3 below. The tasting was done by 2 trained panelists and the results were reported as mean values.

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**Table 3- Hedonic chart**

Attributes		Marks			
		Cashew-apple wine	Raisin ( <i>Cabernet Sauvignon</i> ) wine	Cashew-apple-raisin ( <i>Cabernet Sauvignon</i> ) wine	Premium brand Indian market wine
Visual	Clarity	4	3	3	2

Odor	Intensity	5	4	5	3
	Duration	5	4	3	3
	Quality	2	4	5	3
Flavor	Intensity	4	3	4	2
	Duration	5	3	3	2
	Quality	4	4	6	3
Finish	Duration	1	2	2	3
	Quality	3	3	6	3
Marks are allotted from 6 to 0, Exceptional- 6, Very good- 5, Above average- 4, Average- 3, Below average-2, Poor-1, Faulty-0.					

**C. Qualitative analysis**

The qualitative analysis of the wine revealed the following:

5 **Table 4- Characteristics chart**

Attributes	Marks				Remarks about Cashew-apple-raisin (Cabernet Sauvignon) wine
	Cashew-apple wine	Raisin (Cabernet Sauvignon) wine	Premium brand Indian market wine (Cabernet Sauvignon)	Cashew-apple-raisin (Cabernet Sauvignon) wine	
<b>Appearance</b> Cloudy 0, Clear 1, Brilliant 2	1	2	2	1	Clear, Red color with brownish tinge.
<b>Color</b> Distinctly off 0, Slightly off 1, Correct 2	2	2	2	2	

<b>Aroma and bouquet</b> Vinous 1, Distinct but not varietal 2, Varietal 3, Subtract 1 or 2 for off-odors, add 1 for bouquet	2	1	2	3	Varietal, soothing, pleasant fruity,
<b>Vinegary</b> Oblivious 0, Slight 1, None 2	1	2	1	2	
<b>Total acidity</b> Distinctly high or low 0, Slightly high or low 1, Normal 2	0	0	1	2	
<b>Sweetness</b> Too high or too low 0, Normal 1	1	1	1	1	
<b>Body</b> Too high or too low 0, Normal 1	0 (too low)	0 (too high)	1	1	Light bodied.
<b>Flavor</b> Distinctly abnormal 0, Slightly abnormal 1, Normal 2	1	1	1	2	
<b>Bitterness</b> Distinctly high 0, Slightly high 1, Normal 2	2	1	1	2	

<p><b>General quality</b> Lacking 0, Slight 1, Impressive 2</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>2</p>	<p>Impressive, sweet flavored, varietal, fruity light bodied wine, having distinct cashew apple flavor.</p>
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One of the most striking features of this wine is its unique organoleptic properties and appearance as compared to the raisin wines (straw wines) and cashew apple wines. The wine produced from raisins will have intense, complex taste often having nutty taste. Whereas the cashew apple wine lacks the fine translucent red/ transparent colour more importantly, the sweet, fruity, cashew like aroma which lack the body (perceived "weight"-the sensation of fullness, when tasted) and palate (combined feeling of mouth and nose, when tasted) as compared to the traditional wines.

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Thus the present invention is able to produce a wine having pleasant distinct fruity aroma of cashew apple along with all the desirable properties of raisins having higher Vitamin-C content and antioxidants.

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Moreover, the current invention primarily uses cashew apple fruit for wine making. Raisins are added in limited quantity to make up the sugar content, essential nutrients, anthocyanins and other polyphenols. Use of large quantity of cashew apple fruit, which is otherwise considered an agricultural residue, will offer sizeable income to the cashew farmer. The use of table sugar (sucrose), ammonium phosphate and magnesium sulfate etc. is avoided as fermenting raisins along with cashews in the manner provided by the present invention

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provides all the required nutrients for yeast fermentation, which results in a good quality alcoholic beverage.

As will be readily apparent to those skilled in the art, the present invention  
5 may easily be produced in other specific forms without departing from its essential characteristics.

The present embodiments are, therefore, to be considered as merely illustrative and not restrictive, the scope of the invention being indicated by the  
10 claims rather than the foregoing description, and all changes which come within therefore intended to be embraced therein.

**We claim:**

1. A process for production of an alcoholic beverage, the process  
5 comprising the steps of:  
preparing an inoculum of yeast;  
pretreating cashew apples and raisins;  
crushing the pretreated cashew apples and raisins to obtain cashew  
apple juice and raisin juice;  
10 removing tannins from the cashew apple juice;  
mixing the cashew apple juice with the raisin juice to obtain a juice mix  
having a sugar content of 20-30 Brix;  
fermenting the juice mix with the yeast inoculum for 20-30 days to obtain  
the alcoholic beverage;  
15 reducing the malic acid content of the alcoholic beverage by malo-lactic  
fermentation for 15-25 days; and  
filtering the alcoholic beverage using fining agents.
2. The process as claimed in claim 1, wherein the yeast is selected from any  
20 one of *Saccharomyces cerevisiae*, *Saccharomyces pastorianus*,  
*Saccharomyces uvarum*, *Saccharomyces ellipsoideus*, *Saccharomyces bayanus*  
and *Saccharomyces paradoxus*.
3. The process as claimed in claim 2, wherein the yeast is *Saccharomyces*  
25 *cerevisiae*.
4. The process as claimed in claim 1, wherein the malo-lactic fermentation is  
carried out using bacteria selected from *Oenococcus*, *Lactobacillus* and  
*Pediococcus*.

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5. The process as claimed in claim 4, wherein the bacteria are *Oenococcus oeni*.

6. The process as claimed in claim 1, wherein the pretreatment of cashew apples comprises sanitization of cashew apples with any one of steam, chlorinated water, quaternary ammonium compounds and hypochlorite solution.

7. The process as claimed in claim 1, wherein the pretreatment of raisins comprises steeping raisins in boiling water for 1-45 minutes.

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8. The process as claimed in claim 7, wherein the raisins are steeped in boiling water for 10-25 minutes.

9. The process as claimed in claim 1, wherein tannins are removed from the cashew apple juice by adding one or more of isinglass, egg white, casein, gelatin, starch, sago, celite and polyvinyl pyrrolidone.

10. The process as claimed in claim 9, wherein tannins are removed from the cashew apple juice by adding 4-6% gelatin (w/v) and heating at a temperature of 80-120° C for 10-30 minutes.

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11. The process as claimed in any one of claims 1, 9 or 10, wherein after the step of removing tannins, the cashew apple juice is optionally stabilized using potassium metabisulfite or sodium metabisulfite and after the step of malo-lactic fermentation the alcoholic beverage is optionally stabilized using potassium metabisulfite or sodium metabisulfite.

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12. The process as claimed in claim 1, wherein the mixing step is optionally followed by the step of adjusting the pH to 3-4.

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13. The process as claimed in claim 1, wherein the juice mix is fermented with the yeast inoculum at a temperature of 10-20° C.

14. The process as claimed in claim 1, wherein the malo-lactic fermentation of the alcoholic beverage is carried out at a temperature of 10-20° C for 15-25 days.

15. The process as claimed in claim 1, wherein the fining agents are selected from any one of bentonite powder, celite, egg white, casein and isinglass.

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16. An alcoholic beverage obtained by the process of any one of the claims 1-15.

17. An alcoholic beverage comprising ethyl alcohol, sulfur dioxide, copper, iron, nickel, chromium, manganese, zinc, vitamin C and antioxidants.

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18. The alcoholic beverage as claimed in claim 17, wherein the beverage comprises:

Ethyl alcohol % (v/v) in the range of 10.5-14.5;

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Sulfur dioxide, mg/ L, max. in the range of 50-100;

Copper, mg/L max. in the range of 0-0.05;

Iron, mg/L max. in the range of 0.5-1.5;

Nickel, mg/L max. in the range of 0-0.080;

Chromium, mg/L max. in the range of 0.50-0.75;

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Manganese, mg/L max. in the range of 0.05-0.075;

Zinc, mg/L max. in the range of 0.05-0.15;

Vitamin C, mg/L in the range of 300-800; and

Antioxidant activity, mM TE/ L in the range of 2.0-2.4.

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