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## Description

**[0001]** The present invention relates to a new extract obtained from a plant raw material containing safranal, particularly saffron, said extract having a greater concentration of safranal than currently known plant extracts. The invention also has as its object a particular method allowing obtaining an extract of this type, as well as compositions including it and its uses.

**[0002]** Safranal can be extracted from several plants such as *Crocus sativus, Centaurea sibthorpii, Centaurea consanguinea, Centaurea amanicola, Erodium cicutarium, Chinese green tea, Calycopteris floribunda, Crocus heuffelianus, Sambucus nigra, Gardenia jasminoides, Citrus limon, Cuminum cyminum L., Achillea distans* but is primarily extracted from *Crocus sativus,* also known by the name of saffron.

**[0003]** Saffron is a traditional spice, essentially cultivated in Iran, used in numerous applications such as mood disorders, premenstrual syndrome, erectile disorders, or skin beautification as presented in particular in Javadi B & al. "A survey on saffron in major Islamic traditional medicine books" Iranian journal of basic medical sciences 2013; 16(1): 1-11. Several clinical studies seeking to demonstrate the effectiveness of saffron have been carried out in recent years, in particular as regards the relief of anxiety and depressive disorders as is the case for example in: Akhondzadeh S & al. "Comparison of Crocus sativus L. and imipramine in the treatment of mild to moderate depression: a pilot double-blind randomized trial" [ISRCTN45683816]. BMC Complément Altern Med 2004; 4: 12, or more recently in: Hausenblas HA & al. "Saffron (Crocus sativus L.) and major depressive disorder: a meta-analysis of randomized clinical trials." Journal of integrative medicine 2013; 11(6): 377-83, or even Derek J. Griffiths "Editorial: Bladder Failure-A Condition to Reckon With." The Journal of Urology, 169(3), pp. 1011-1012.

**[0004]** Saffron (*Crocus sativus*) comprises several molecules, including safranal, a volatile molecule responsible for the odor of the spice, recognized for its effectiveness in the previously mentioned applications. The extracts used in the prior art are mostly standardized at 2% safranal by UV spectrometry according to standard ISO 3632-2:2010 (Spices - Saffron (Crocus sativus L.) - Part 2: Test methods. ISO International standard; 2010: 1-42). This standard describes a very general analysis protocol consisting of dissolving the saffron extract in water, agitating it, filtering it then carrying out a spectrophotometric readout at 330 nm. However, this method can be criticized because the absence of the use of specific solvents and/or reagents

causes the quantification of molecules other than safranal so that it does not reflect at all the real concentration of safranal of the extract.

**[0005]** In fact, the HPLC (High Performance Liquid Chromatography) analysis of safranal in the extracts of the prior art reveal real concentrations from 30 to 1000 times lower than those obtained by UV spectrometry analysis according to standard ISO 3632-2, and with a great variability in the correlation of the two methods, as demonstrated in the results of Table 1 below:

*Table 1: comparison of the results obtained with two methods of assaying safranal in several extracts of the prior art (results given in percentage by weight of total dry matter of the extract).*

| Saffron Extract | Safranal, ISO Method 3632-2:2010 | Safranal, HPLC Method |
|---|---|---|
| Saffron dry extract - Natac | 2.71 | 0.0650 |
| Safran ES stigmate - Plantex | 2.12 | 0.0040 |
| Saffr'Activ® - Green Plant Extract | 2.32 | 0.0380 |
| Affron® - Pharmactive | 2.90 | 0.0190 |

**[0006]** In reality, known extracts of plants containing safranal, and in particular saffron extracts, obtained with the methods of the prior art, have little safranal content, including the Affron® product also disclosed in European patent application EP3446678.

**[0007]** The measurement method is therefore very important, because it leads to different results from those obtained with the prior measurement method using spectrometry used systematically for measuring the concentration of safranal in a product. This prior method, referred to as ISO3632-2: 2010, over-evaluates the safranal quantity as demonstrated in the present application, as well as in the publication Garcia-Rodriguez et al., 2017 "Comparative evaluation of an ISO 3632 method and an HPLC-DAD method for safranal quantity determination in saffron." In this publication, the study was carried out on 390 samples of saffron. Over-estimation can be from 20 to 50 times. Thus, an extract titrated at X% of safranal by the measurement method referred to as ISO3632-2: 2010 comprises in reality much less safranal.

**[0008]** Thus, a former product of the Activ'Inside company, entitled "Safr'Inside" comprises between 0.3 and 2% safranal, measured according to method ISO3632-2.

**[0009]** Other saffron-based products are also known, such as samples or raw materials of saffron and the compositions comprising them; for example, products described in Sudha Kulkarni et al. 2014 "Development of Extraction Methods and Quantification of Safranal by High Performance Liquid Chromatography from Cuminum cyminum L. and Studying its Antimicrobial Properties" can be cited; patent application FR 2995185, *Sujata V et al. 1992 "doi :10.1016/0021-9673(92)85699-T"; Lage M et al. 2009 "doi :10.1016/J.SCIENTA.2009.02.017"; Loskutov A V et al. 2000 "Development of an improved procedure for extraction and quantitation of safranal"; Urbani Eleonora et al. 2016 "doi :1007/S00217-016-2687-Z"*» and patent application FR 2900053. Yet none of these documents describes saffron extracts with at least 0.2% of safranal, impregnated and encapsulated in a bulking agent.

**[0010]** The purpose of the present invention is to respond to this problem by proposing a saffron extract having a greater saffron content than existing extracts.

**[0011]** In particular, the invention seeks a plant extract obtained from saffron, comprising a concentration measured by the HPLC method of at least 0.2% safranal by weight relative to the total weight of dry matter of the extract.

**[0012]** This extract can in particular be obtained by a method comprising a heat treatment step, in particular a specific method which comprises the implementation of the following steps:

- Possibly, drying of the raw material,

- Grinding the dried raw material,

- Aqueous or hydroalcoholic extraction or extraction using an organic solvent,

- Impregnation onto the bulking agent in the extraction solution and encapsulation of the extract obtained,

- Heat treatment of the extract for a duration between 24 and 72 hours at a temperature between 30°C and 60°C.

**[0013]** This method is economical, simple to implement and allows obtaining a saffron extract comprising a concentration measured by the HPLC method of at least 0.2% of safranal by weight, relative to the total weight of dry matter of the extract. Advantageously, an extract of

this type contains a real concentration of safranal greater than that of currently known extracts and thus has greater effectiveness, in particular for combating depression, anxiety, mood disorders, erectile disorders and premenstrual disorder. The invention therefore has as its object the saffron extract for these uses, and also seeks cosmetic, dietary, nutritional or medicinal compositions including it.

**[0014]** Other features and advantages will be revealed by the detailed description of the invention which follows, with reference to the appended figures which show:

- Figure 1: chromatogram of the extract according to the invention of example 1, obtained by the UHPLC method,

- Figure 2: chromatogram of the extract according to the invention of example 2, obtained by the UHPLC method.

- Figure 3A: chromatogram of an extract of the prior art according to example 3A (obtained without heat treatment), obtained by the UHPLC method,

- Figure 3B: chromatogram of an extract of the prior art according to example 3B (obtained without heat treatment), obtained by the UHPLC method,

**[0015]** The invention therefore has as its object a plant extract obtained from a plant (or plant raw material) containing safranal, comprising a concentration measured by the HPLC method of at least 0.2% safranal by weight relative to the total weight of dry matter.

**[0016]** What is meant by "plant extract obtained from a plant containing safranal" or "plant extract obtained from a plant raw material containing safranal" is at least one molecule or a set of several molecules originating in all or part of a plant containing safranal. This can be a specific selection of native molecules present in the plant or of molecules obtained by any type of transformation of said native molecules. The raw material used to obtain the extract can consist of all or part of a plant containing safranal. If the plant containing safranal is saffron, the plant extract according to the invention can be obtained in particular from saffron stigmata and/or petals and/or bulbs.

**[0017]** The extract according to the invention is not the raw material as such. It is not the plant, the portion of the plant, the dried plant, the portion of the dried plant or the sample of the plant or the sample of the dried plant. Neither is it an essential oil. What is meant by "plant containing safranal" or "raw material containing safranal" (the terms plant and raw material being usable without distinction within the meaning of the invention) is any plant containing

safranal, in particular *Crocus sativus, Centaurea sibthorpii, Centaurea consanguinea, Centaurea amanicola, Erodium cicutarium, Chinese green tea, Calycopteris floribunda, Crocus heuffelianus, Sambucus nigra, Gardenia jasminoides, Citrus limon, Cuminum cyminum L., Achillea distans.* Preferably, the plant containing safranal from which the extract according to the invention is obtained is *Crocus sativus* (saffron).

**[0018]** The extract according to the invention comprises at least safranal, and the safranal is present at a concentration of at least 0.2% by weight of dry matter, measured by the HPLC (High Performance Liquid Chromatography) method. The measurement method has great importance as it is understood that with another measurement method, particularly using UV spectrometry (ISO 3632-2 standard), the result obtained does not correspond to the real concentration of safranal due to the non-specificity of this method.

**[0019]** The HPLC analysis method of molecules is a method known to a person skilled in the art. It allows precisely identifying and quantifying unitary molecules. Preferably, the analysis method used for assaying the molecules contained in the extract according to the invention, safranal in particular, is a UHPLC (Ultra High Performance Liquid Chromatography) method. This method allows further increasing the resolution and the separation of the compounds, and detecting several compounds on the same chromatogram based on a single sample.

**[0020]** According to a particularly suitable embodiment, the HPLC or UHPLC analysis method comprises a prior step of preparing the sample comprising the following steps:

- Introduction of the saffron extract to be assayed into a hydroalcoholic solution,
- Magnetic agitation for at least 1 hour,
- Ultrasonic bath for at least 5 minutes,
- Membrane filtration, then injection.

**[0021]** The analysis method, after preparation of the sample, then comprises conventionally a step of elution, then detection.

**[0022]** Elution is preferably carried out by means of a binary gradient. The first solvent can for example be an organic solvent and an acid. Preferably, it is formic acid in acetonitrile. The second solvent can for example be an acidified aqueous solvent. Preferably it is formic acid in water.

**[0023]** In addition to safranal, the extract according to the invention can comprise other molecules, particularly crocins and/or derivatives of picrocrocin, in particular in the case where it is a saffron extract.

**[0024]** In the case where they are present, crocins preferably represent at least 1% by weight of dry matter of the extract, measured by the HPLC method.

**[0025]** In the case where they are present, flavonoids derived from kaempferol preferably represent at least 500 ppm by weight of dry matter of the extract, measured by the HPLC method.

**[0026]** In the case where they are present, picrocrocins preferably represent at least 0.5% by weight of dry matter of the extract, measured by the HPLC method.

**[0027]** The extract according to the invention is impregnated on a support. What is meant by "support" or "bulking agent" within the meaning of the invention is any dietary substance or plant, mineral or chemical origin used as an ingredient or dietary additive allowing impregnation and thereby the dilution of the extract of the invention.

**[0028]** The support can in particular be selected from the following constituents: maltodextrin, sugar, silica, gum arabic, preferably maltodextrin.

**[0029]** When the extract is impregnated on a support, the percentages of molecules present in the extract are given in weight of dry matter in the extract, including the support.

**[0030]** The extract according to the invention can be obtained by any means allowing obtaining at least 0.2% of safranal by weight of dry matter of the extract. Preferably, the extract according to the invention is obtained by a method comprising a heat treatment step. This step can be implemented on the raw material at the beginning, during or at the end of the method of obtaining the extract.

**[0031]** What is meant by heat treatment within the meaning of the invention is heating to a temperature greater than the ambient temperature. Preferably, the heat treatment step is a heat treatment carried out for at least 2 hours, preferably at least 24 hours, at a temperature comprised between 30°C and 95°C, preferably between 30°C and 60°C.

**[0032]** The heat treatment can be accomplished by any known means, particularly in an autoclave, in an oven, by cooking, pasteurization or debacterization. Preferably, the heat treatment is carried out in an autoclave.

**[0033]** According to a particularly suitable embodiment, the plant extract according to the invention is obtained by a method comprising the implementation of the following steps accomplished based on the saffron raw material:

- Possibly drying,
- Grinding, preferably between 50 and 500 µm,
- Aqueous or hydroalcoholic extraction or extraction with an organic solvent,
- Impregnation onto a support of the extract obtained,
- Heat treatment.

**[0034]** The steps of aqueous or hydroalcoholic extraction or extraction with an organic solvent and impregnation onto a support of the extract obtained constitutes the extraction method called Tech'Care Extraction®.

**[0035]** The heat treatment step can be carried out at any time in this method, preferably at the end of the method on the saffron raw material, and completes the Tech'Care Extraction® method.

**[0036]** According to a particularly suitable embodiment, the heat treatment step in the implementation of this method is a heat treatment step in an autoclave for at least 2 hours, even more preferably for at least 24 hours at a temperature between 30°C and 95°C, even more preferably at a temperature between 30°C and 60°C.

**[0037]** The grinding can be accomplished by any suitable known means, particularly by a knife, pin or hammer type grinder, preferably a pin grinder.

**[0038]** The extraction step can be accomplished by any suitable known means.

**[0039]** In the case of an aqueous extraction, the ground material is introduced into the water at the rate of 50g/L.

**[0040]** In the case of a hydroalcoholic extraction, the solvent can in particular be ethanol, preferably ethanol at 60% v/v. The ground material is introduced into the hydroalcoholic solution at the rate of 50 g/L.

**[0041]** In the case of an extraction with an organic solvent, the solvent can in particular be methanol or ethyl acetate, preferably methanol at 30% v/v. The ground material is introduced into the organic solvent at the rate of 100 g/L.

**[0042]** After extraction, the method can also comprise an acidification step. This step consists of adding acid into the aqueous or hydroalcoholic solvent. It allows reducing the pH of the extraction solution between 3 and 5. It can in particular be accomplished under the following conditions: addition of citric or hydrochloric acid into the hydroalcoholic solvent to adjust the pH to 4.

**[0043]** The step of impregnation onto a support consists of adding a bulking agent into the extraction solution. The support or bulking agent can be selected in particular from the following constituents: maltodextrin, sugar, silica, gum arabic, preferably maltodextrin.

**[0044]** After this impregnation step, the method can also comprise a step of emulsion and/or encapsulation of the extract obtained. This step consists of the agitation at high speed of the extraction solution containing the bulking agent and possibly the auxiliary. It can in particular be accomplished by means of auxiliaries such as gum arabic, cyclodextrins or fats.

**[0045]** The extract according to the invention can be used alone or integrated into a cosmetic, dietary, nutritional or medicinal composition, at the rate of 0.1 to 100% by weight of dry matter of the composition. Preferably, the extract according to the invention is present in the composition at a quantity allowing the administration to humans or animals of at least 0.07 mg of extract according to the invention per kg of body weight per day, even more preferably between 1.4 to 4.2 mg of extract according to the invention per kg of body weight per day.

**[0046]** The invention therefore has as its object a composition of this type, preferably a composition appearing in the form of capsules, tablets, soft capsules, sticks, sachets, prepared dishes, oil, lotions, creams or emulsions.

**[0047]** The compositions comprising an extract according to the invention can contain other known suitable components, such as excipients, selected depending on the expected form and use of the composition, or other active principles or active molecules. The extract according to the invention and the compositions including it can be used in numerous applications, in particular for preventing or treating depression and anxiety or even to prevent or treat mood disorders (pathological mood disorders), erectile disorders, premenstrual disorders.

**[0048]** Thus the invention also has as its object the extract for its use:

- in preventing or treating depression, in humans or animals,
- in preventing or treating anxiety in humans or animals,

- in preventing or treating mood disorders in humans,

- in preventing or treating erectile disorders in humans (in men),

- in preventing or treating premenstrual disorders in humans (in women).

**[0049]** Advantageously, due to its large quantity of safranal, greater than that of all existing extracts, the extract according to the invention has great effectiveness for these applications. Moreover, it is important to use an extract rather than the raw material as such (whole plant or portion, dried or not) because the extracts according to the invention allow increasing the bioavailability of the active molecules because the latter are no longer embedded in the plant matrix of the flower and are more accessible to the organism. The presence of the support in the extract also allows obtaining better homogeneity of the molecules of interest in the finished product.

**[0050]** The invention is illustrated at present by examples of extracts and method according to the invention (examples 1 and 2), comparative examples of extracts of the prior art (examples 3A and 3B) and of compositions.

**[0051]** For all the examples, the method of assaying the molecules in the extract, and in particular safranal, is a UHPLC method with the following characteristics:

1. Preparation of the sample

Extraction of the sample with a hydroalcoholic solution. Magnetic agitation for at least 1 hour, then ultrasonic bath for at least 5 minutes. Membrane filtration, then injection.

2. HPLC elution

Binary gradient:

Solvent A (formic acid in MeCN)
Solvent B (formic acid in water)

3. Detection

| | |
|---|---|
| Crocins | 440 nm |
| Picrocrocin derivatives | 250 nm |
| Flavonoids | 350 nm |
| Safranal | 310 nm |

4. Standards

Trans-crocin-4-gentiobiose-gentobiose

Trans-crocin 3-gentiobiose-glucose

beta-cyclocitral

Kaempferol glucoside

Safranal

Example 1: Extract according to the invention

**[0052]** A first example of an extract is an extract obtained by the implementation of the method consisting of implementing the following steps:

- utilization of stigmata of Crocus sativus,

- grinding by means of a pin grinder, to a size of 250 µm,

- hydroalcoholic extraction using ethanol at 60% v/v, at the rate of 50g of saffron per liter of hydroalcoholic solution,

- impregnation onto maltodextrin, introduced into the hydroalcoholic solution,

- heat treatment in an autoclave for 48 hours at 40°C.

**[0053]** The extract obtained is assayed for several molecules using the UHPLC method described in the preamble of the portion relating to examples.

**[0054]** The chromatogram obtained is shown in Figure 1.

**[0055]** The extract is characterized by:

- a concentration of safranal of 0.238%,

- a concentration of crocins of 3.96%,

- a concentration of picrocrocin derivatives de 1.08%, and

- a concentration of flavonoids of 0.25%.

Example 2: Extract according to the invention

**[0056]** A second example of an extract is an extract obtained by the implementation of the method consisting in the implementation of the following steps:

- utilization of stigmata of Crocus Sativus,

- grinding by means of a pin grinder, to a size of 250 µm,

- aqueous extraction acidified with hydrochloric acid to a pH of 4,

- impregnation onto gum arabic introduced into the aqueous solution,

- heat treatment in an autoclave for 72 hours at 40°C.

**[0057]** The extract is assayed for several molecules with the UHPLC method described in the preamble of the portion relating to examples.

**[0058]** The chromatogram obtained is shown in Figure 2.

**[0059]** The extract is characterized by:

- a concentration of safranal of 0.73%,

- a concentration of crocins of 1.0%,

- a concentration of picrocrocin derivatives of 2.93%, and

- a concentration of flavonoids of 0.57%.

Example 3: Extract according to the invention

**[0060]** A third example of an extract is an extract obtained by the implementation of the method consisting of the implementation of the following steps:

- utilization of stigmata of Crocus Sativus,

- grinding by means of a pin grinder, to a size of 250 µm,

- First heat treatment in an autoclave for 2 hours to 6 hours at 105°C

- Second heat treatment in an autoclave for 2 hours to 6 hours at 140°C

- hydroalcoholic extraction with ethanol at 60% v/v, at the rate of 50g of saffron per liter of hydroalcoholic solution,

- impregnation onto maltodextrin, introduced into the hydroalcoholic solution,

- drying the liquid extract by lyophilization.

**[0061]** The extract is characterized by:

- a concentration of safranal of 0.39%,

- a concentration of crocins of 2.31%,

- a concentration of picrocrocin derivatives of 1.37%, and

- a concentration of flavonoids of 0.24%.

Example 3A: Extract obtained by spraying (not included in the invention)

**[0062]** A first extract counter-example is an extract obtained by the implementation of the method consisting of implementing the following steps:

- utilization of stigmata of Crocus sativus,

- grinding by means of a pin grinder, to a size of 250 µm,

- hydroalcoholic extraction with ethanol at 60% v/v, at the rate of 50 g of saffron per liter of hydroalcoholic solution,

- impregnation onto maltodextrin, introduced into the hydroalcoholic solution,

- spray drying of the liquid extract.

**[0063]** The chromatogram obtained is shown in Figure 3A.

**[0064]** The extract obtained is characterized by:

- a concentration of safranal of 0.028%,

- a concentration of crocins of 4.98%,

- a concentration of picrocrocin derivatives of 1.26%, and

- a concentration of flavonoids of 0.24%

Example 3B: Extract obtained by lyophilization (not included in the invention)

**[0065]** A second counter-example of an extract is an extract obtained by the implementation of the method consisting of implementing the following steps:

- utilization of stigmata of Crocus sativus,

- grinding by means of a pin grinder, to a size of 250 µm,

- hydroalcoholic extraction with ethanol at 60% v/v, at the rate of 50 g of saffron per liter of hydroalcoholic solution,

- impregnation onto maltodextrin, introduced into the hydroalcoholic solution,

- drying of the liquid extract by lyophilization.

**[0066]** The chromatogram obtained is shown in Figure 3B.

**[0067]** The extract is characterized by:

- a concentration of safranal of 0.038%,

- a concentration of crocins de 4.40%,

- a concentration of picrocrocin derivatives of 1.15%, and

- a concentration of flavonoids of 0.22%.

Example 4: Example of a nutritional composition intended for humans

**[0068]** Example 4 is a 150 mg capsule, consisting of:

- The extract according to the invention of example 1: 15 mg

- Maltodextrin: 135 mg

**[0069]** The composition is obtained by mixing the constituents under conventional conditions known to a person skilled in the art, and inserted into a capsule also under conventional conditions.

**[0070]** The recommended dosage is 2 capsules per day.

Example 5: Example of a medicine intended for humans

**[0071]** Example 5 is a 1500 mg tablet consisting of:

- The extract according to the invention of example 2: 20 mg,

- Sorbitol: 1430 mg,

- Magnesium stearate: 27 mg,

- Brilliant Blue color FCF topcoat E133: 20 mg,

- Acesulfame K (E950): 1.5 mg,

- Sodium saccharinate (E954): 1.5mg.

**[0072]** The composition is obtained by mixing the constituents under conventional conditions known to a person skilled in the art, and compounded also under conventional conditions.

**[0073]** The recommended dose is 1 tablet per day.

Example 6: Example of a nutritional composition intended for animals

**[0074]** Example 6 is a 300 mg tablet consisting of:

- The saffron extract of example 1: 6 mg,

- Microcrystalline cellulose: 135 mg,

- Magnesium stearate: 10 mg.

**[0075]** The composition is obtained by mixing the constituents under conventional conditions known to a person skilled in the art, and compounded also under conventional conditions.

**[0076]** The recommended dose is 1 tablet per day.

Example 7: Cosmetic topical composition in the form of a day cream

**[0077]** This is a composition appearing in the form of a crème intended to be applied to the skin.

**[0078]** It consists of:

- The extract according to the invention of example 1: 10 mg,

- Preservative: 0.5%,

- Scents: 0.6%,

- Fatty phase + aqueous phase: 97.4%.

**[0079]** The fatty phase consists of an emulsifier and triglycerides. The aqueous phase consists of water associated with a carboxylic pyrrolidone acid.

**[0080]** The composition is obtained by adding the saffron extract of example 1, under agitation, at the same time as the preservatives and the scents, to the aqueous phase for 10 minutes. The aqueous phase itself is then added under agitation to the fatty phase in a mixing lasting 30 minutes.

**Patentkrav**

**1.** Planteekstrakt fremstillet ud fra en safranalholdig planteråvare valgt blandt *Crocus sativus, Centaurea sibthorpii, Centaurea consanguinea, Centaurea amanicola, Erodium cicutarium, Chinese green tea, Calycopteris floribunda, Crocus heuffelianus, Sambucus nigra, Gardenia jasminoides, Citrus limon, Cuminum cyminum L.* og *Achillea distans.*, hvilket ekstrakt omfatter:

- en koncentration målt ved en HPLC-metode på mindst 0,2 vægt-% safranal i forhold til den samlede tørvægt af ekstraktet,
- et fyldstof valgt blandt maltodextrin, sukker, siliciumdioxid og gummi arabicum,

hvilket ekstrakt kan fremstilles ved en fremgangsmåde, der omfatter følgende trin:

- formaling af den safranalholdige planteråvare,
- ekstraktion med vand, med vand og alkohol eller med et organisk opløsningsmiddel,
- imprægnering på fyldstoffet i ekstraktionsopløsningen og indkapsling af det opnåede ekstrakt,
- varmebehandling i et tidsrum på mellem 24 og 72 timer ved en temperatur på mellem 30° C og 60° C.

**2.** Planteekstrakt ifølge det foregående krav, **kendetegnet ved, at** det ligeledes omfatter crociner og/eller flavonoider afledt af kaempferol og/eller picrocrociner.

**3.** Planteekstrakt ifølge det foregående krav, **kendetegnet ved, at** det omfatter:

- mindst 1 vægt-% crocin i forhold til den samlede tørvægt af ekstraktet, målt ved en HPLC-metode,
- mindst 500 vægt-ppm flavonoider afledt af kaempferol af tørvægten af ekstraktet, målt ved en HPLC-metode,
- mindst 0,5 vægt-% picrocrocin af tørvægten af ekstraktet, målt ved en HPLC-metode.

**4.** Planteekstrakt ifølge et af de foregående krav, **kendetegnet ved, at** det er fremstillet ud fra støvfang og/eller kronblade og/eller løg af *Crocus sativus.*

**5.** Planteekstrakt ifølge et af de foregående krav, **kendetegnet ved, at** varmebehandlingen udføres i en tørrekasse, en ovn, ved kogning, pasteurisering eller debakterisering.

**6.** Fremgangsmåde til fremstilling af et planteekstrakt ifølge et af de foregående krav, **kendetegnet ved, at** den omfatter iværksættelsen af følgende trin:

- formaling af en safranalholdige planteråvare,
- ekstraktion med vand, med vand og alkohol eller med et organisk opløsningsmiddel,
- imprægnering på fyldstoffet i ekstraktionsopløsningen og indkapsling af det opnåede ekstrakt,
- varmebehandling i et tidsrum på mellem 24 og 72 timer ved en temperatur på mellem 30° C og 60° C.

**7.** Fremgangsmåde ifølge ovenstående krav, **kendetegnet ved, at** den ligeledes omfatter et forsuringstrin efter ekstraktionstrinnet.

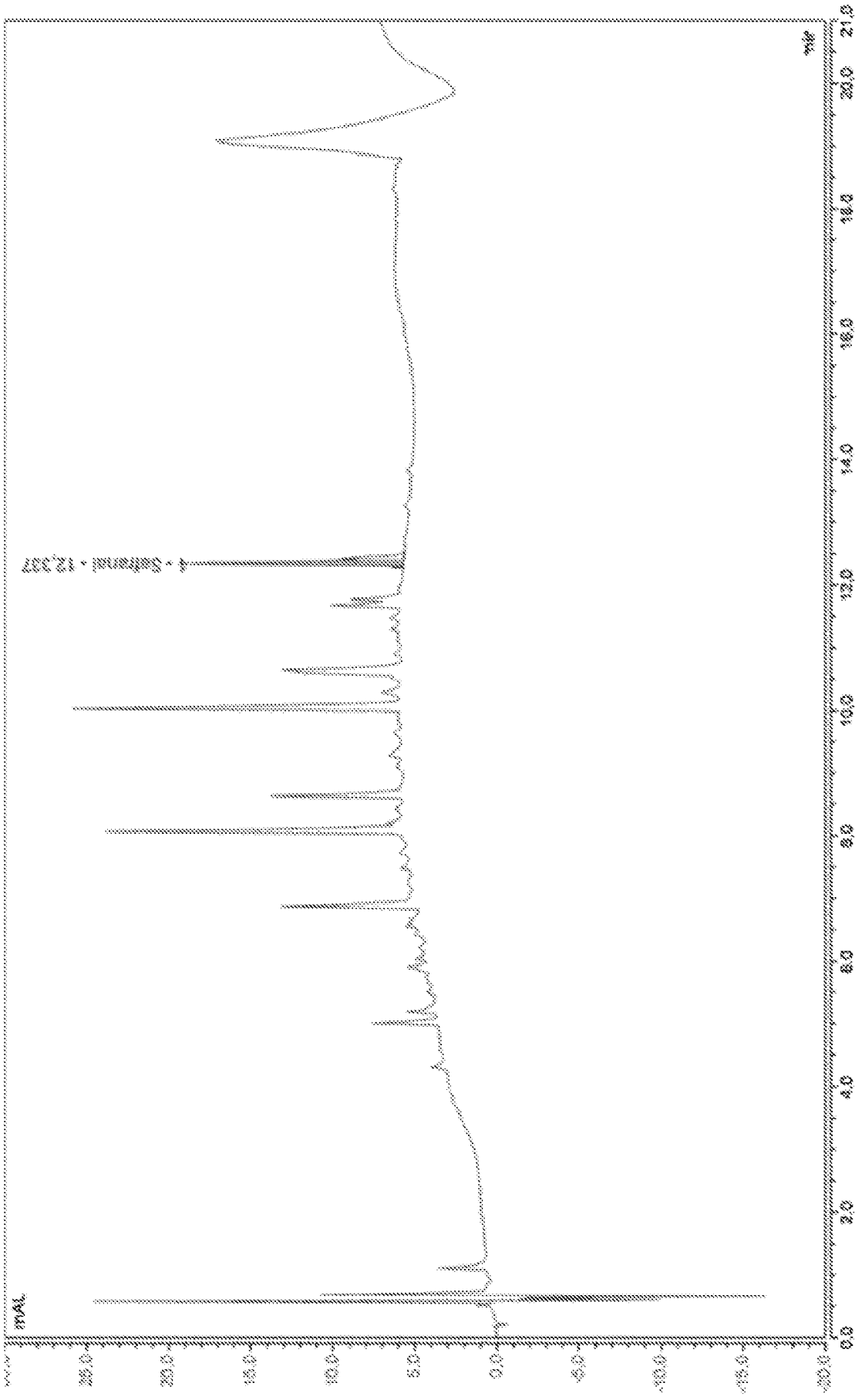
**8.** Fremgangsmåde ifølge et af kravene 6 eller 7, **kendetegnet ved, at** den ligeledes omfatter et emulgeringstrin.

**9.** Kosmetik-, levnedsmiddel-, ernærings- eller lægemiddelsammensætning, der indeholder mellem 0,1 og 100 vægt-% tørstof af et planteekstrakt ifølge et af kravene 1 til 5.

**10.** Sammensætning ifølge det foregående krav, **kendetegnet ved, at** den fremstår i form af gelatinekapsler, piller, bløde kapsler, strips, breve, færdigretter, olie, lotion, creme eller emulsion.

**11.** Planteekstrakt ifølge et af kravene 1 til 5 til anvendelse ved forebyggelse eller behandling af depression eller angst hos et menneske eller et dyr.

**12.** Planteekstrakt ifølge et af kravene 1 til 5 til anvendelse ved forebyggelse eller behandling af humørforstyrrelser, forstyrrelser af erektionen eller præmenstruelle forstyrrelser hos et menneske.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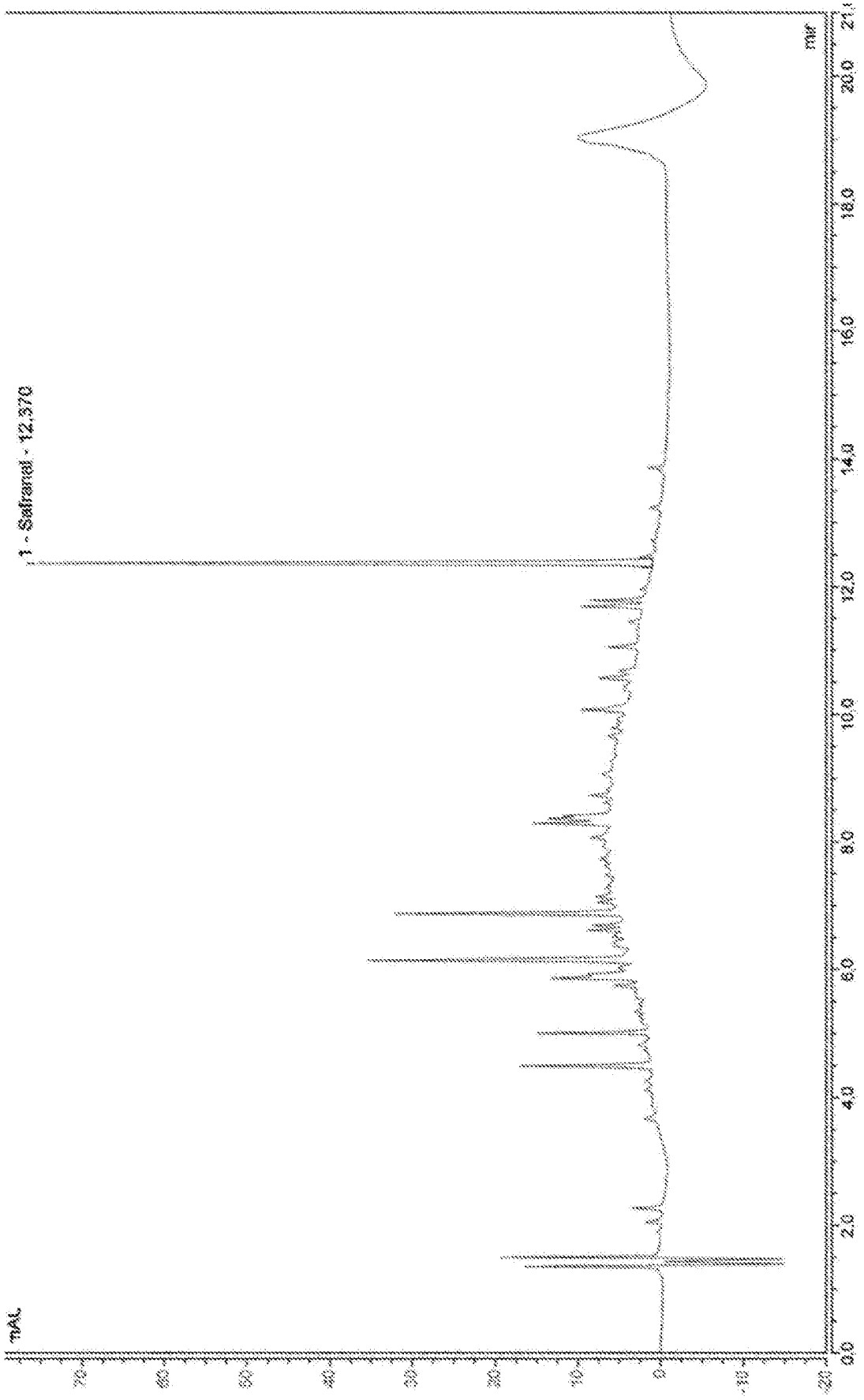
20.0
21.0

Figure 1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10
0
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-20

Figure 2

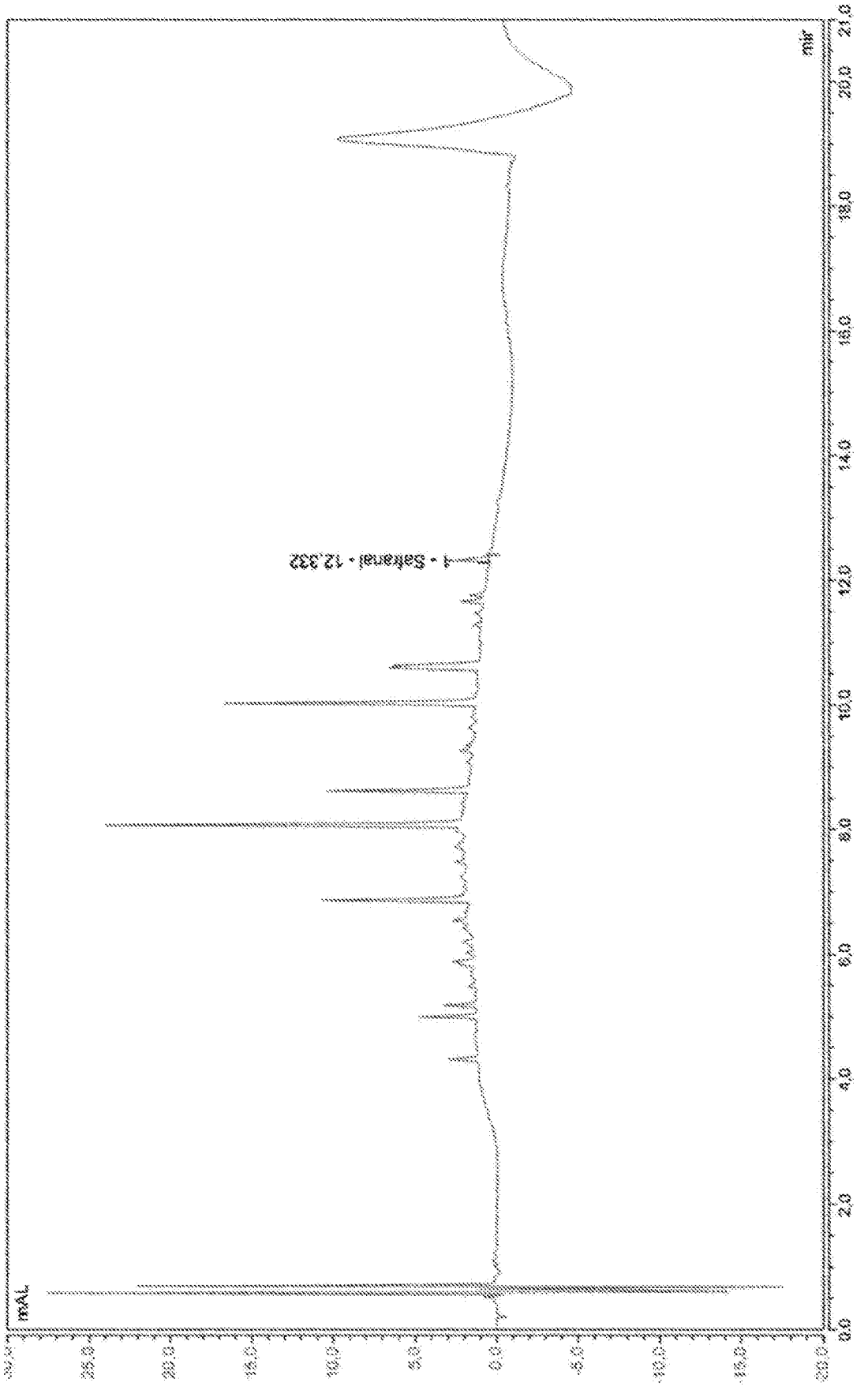


Figure 3A

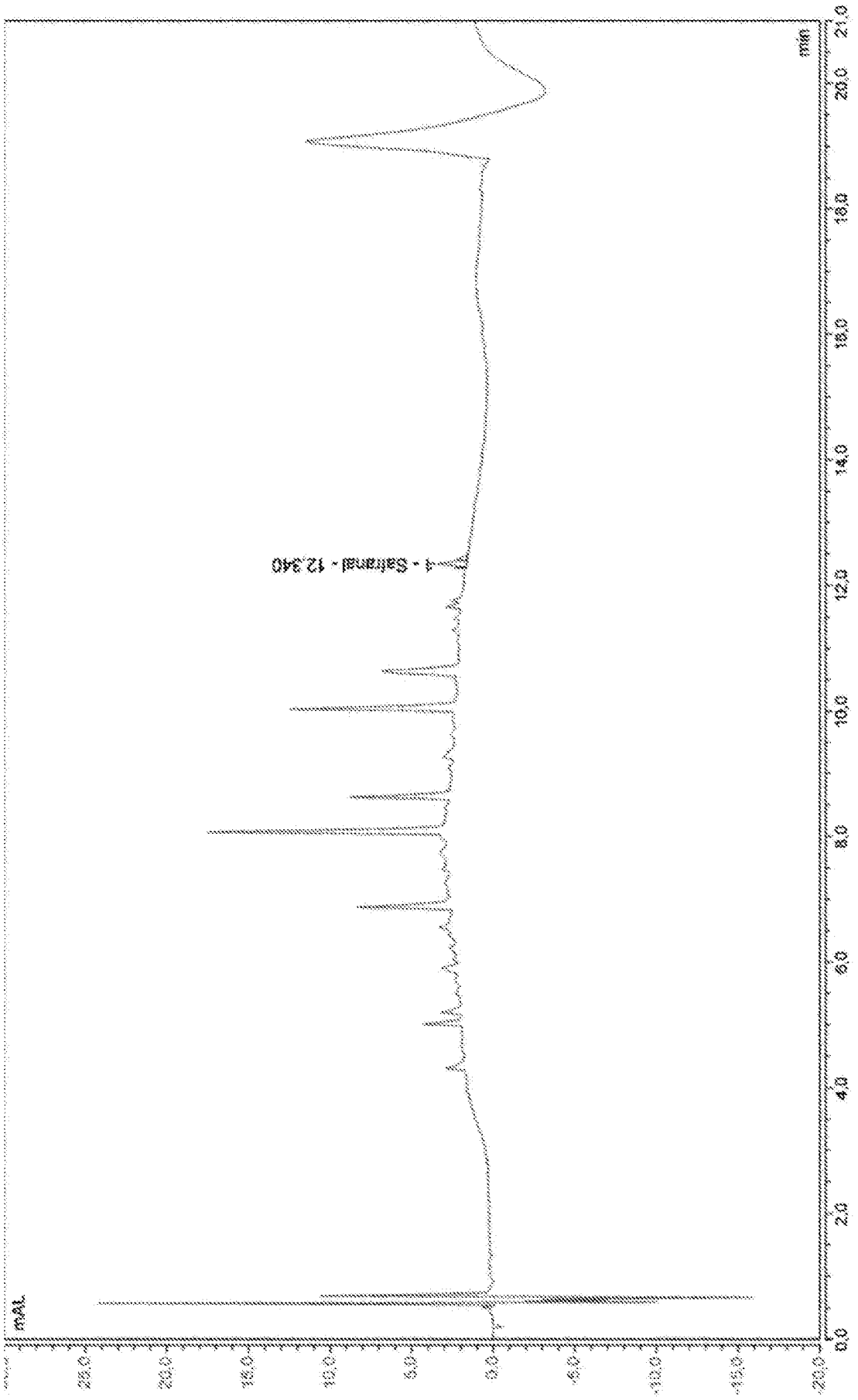
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Figure 3B