

DescriptionSkin Care Beverage Composition

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The present invention relates to a skin care beverage composition. Particularly, it relates to ready-to-drink, liquid concentrate, and dry mix skin care beverages containing the composition. The invention also relates to methods of providing skin protection and skin nourishment to a person in need.

Background of the invention

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Topical application is the most common method to provide skin with active ingredients also including nutrients. In general, topically applicable compositions in the form of cremes, lotions etc. are used to treat selected local portions of the skin, for example face and hands.

Of particular interest in skin care is protection of the skin from environmental stress and to supply nutritional support for skin-build-up. A product well balanced in this respect would contribute positively to skin health, and by extension, beauty and overall well-being.

In particular, skin beauty may be addressed as preventing or slowing-down the natural aging process. Currently, there is general scientific agreement that a variety of environmental stress factors, particularly sun/UV-light exposure, are main factors responsible for age-related changes.

Several changes in skin contribute to the perception of aging. The most prominent are wrinkles, skin atrophy and pigmentation disorders. Wrinkles are based on reorganization of the connective tissue. The changes are correlated with sun/UV-light exposure and are thought to

reflect degradation of connective tissue with modifications in tissue architecture. Sun protected body sites will develop fewer and less pronounced wrinkles.

- 5 Skin atrophy reflects thinning of skin and skin appendages. Skin will get thinner including epidermis and dermis. Connective tissue architecture becomes notably altered and elasticity will become reduced. Epidermal and dermal changes are related to environmental stress such as
- 10 UV-exposure, smoking etc.

- Furthermore, the skin will get dryer. The sebaceous glands increase in size but produce less skin lipids. Skin becomes more sensitive to detergents and irritative
- 15 substances. For sebum, these changes are mostly associated with aging and hormonal changes. The relationship with external stress is less obvious.

- Finally, pigmentation disorders involve development of
- 20 brownish spots/tones (hyper-pigmentation) at the sides of accumulated and high sun exposure, for example face, hands etc. Pigment cell number as well as pigment production can increase. Pigmentation is usually not desired by the individuals as increased pigmentation affects the outer
- 25 appearance.

- Skin health and skin beauty are considered to be in a mutual relationship. A healthy skin gives a firm, smooth, soft and "radiant" outer appearance which contributes to
- 30 the general well-being of an individual.

- Skin nourishment is also an essential prerequisite for a healthy skin. Skin nourishment is important to provide the skin with sufficient firmness and hydration/moisture.
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As topical application is associated with treatment of local skin areas only, it would be desirable to have available a composition which can be taken orally in order to provide the whole skin area with necessary care in

terms of ingredients for protection and nourishment.

For the purpose of this specification, the term "skin care beverage composition" should be understood to mean a
5 composition suitable to form a skin care beverage after interaction with a liquid medium. Examples of such skin care beverages are a ready-to-drink, dry mix, granules and liquid concentrate.

10 It is therefore an object of the invention to provide an improved skin care product delivery technology.

It is a further object of the invention to provide a skin care administration means capable of protecting the skin
15 over its whole area from various stresses, most notably environmental stress.

It is another object of the invention to provide a skin care administration means capable of nourishing the skin
20 over its whole area.

It is still another object of the invention to provide a skin care administration means capable of simultaneously protecting and nourishing the skin over its whole area.
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It is a further object of the invention to provide a method of repairing and beautifying the skin over its whole area suitable for patients suffering from skin damages due to any manner of skin disorders including
30 medical and non-medical indications.

It is another object of the invention to provide a non-therapeutic method of providing skin protection and skin nourishment over the whole skin area for persons in need
35 to improve their skin condition over its whole area while preventing or slowing-down the aging process.

Summary of the Invention

The invention provides skin care beverage compositions including: a ready-to-drink, liquid concentrate and dry mix skin care beverages comprising the composition; a method of providing skin protection and skin nourishment to a patient in need, a non-therapeutic method of providing skin protection and skin nourishment to an individual and the use of a skin care beverage composition for preparing a skin care beverage product.

According to a first aspect of the invention, a skin care beverage composition comprises a photoprotection agent comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, tocotrienols, carotenoides and/or vitamin C and an agent for skin nourishment comprising at least one polyunsaturated acid and/or an agent for improving collagen synthesis comprising glycine, proline, hydroxyproline and/or arginine.

According to a second aspect of the invention, a skin care beverage comprises a composition as defined above.

According to a third aspect of the invention, a method of providing skin protection and skin nourishment to a patient in need comprises the step of administering an effective amount of a skin care beverage composition comprising a photoprotection agent comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, tocotrienols, carotenoides and/or vitamin C and an agent for skin nourishment comprising at least one polyunsaturated acid and/or an agent for improving collagen synthesis comprising glycine, proline, hydroxyproline and/or arginine.

According to a fourth aspect of the invention, a non-therapeutic method of providing skin protection and skin nourishment to an individual comprises the step of

ingesting an effective amount of a skin care beverage comprising a photoprotection agent comprising a composition comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, 5 tocotrienols, carotenoides and/or vitamin C and an agent for skin nourishment comprising at least one polyunsaturated acid and/or an agent for improving collagen synthesis comprising glycine, proline, hydroxyproline and/or arginine.

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According to a fifth aspect of the invention, a skin care beverage composition comprising a photoprotection agent comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, tocotrienols, carotenoides 15 and/or vitamin C and an agent for skin nourishment comprising at least one polyunsaturated acid. is used for preparing a skin care beverage and/or an agent for improving collagen synthesis comprising glycine, proline, hydroxyproline and/or arginine.

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The sub-claims define specific embodiments of the present invention.

Detailed Description of Embodiments

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It has been found that a skin care beverage composition comprising a photoprotection agent comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, tocotrienols, carotenoides and/or vitamin C 30 and an agent for skin nourishment comprising at least one polyunsaturated acid. exhibits benefits related to skin health and skin beauty. The skin care composition of the present invention being carried through a beverage, allows the whole area of skin to be improved through systemic distribution of required biologically active agents. This 35 is the decisive advantage over traditional skin nourishment/protection compositions which are applied topically, i.e., locally on certain skin portions. As a result of good protection and good nourishment, an

excellent skin hydration is achieved.

Examples of photoprotection agents are green tea extract and fractions thereof, polyphenols, betalains (beet
5 pigments), anthocyanins, vitamins such as C, E; Co-Q10, glutathione, carotenoids, metals such as selenium or zinc, taurine, tocotrienol, tocopherols, ellagic acid and isoflavones. They may be used alone or in any combination thereof.

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The photoprotection agent of the skin care beverage composition of the present invention comprises a mixture of specific photoprotection agents which are biological antioxidants. The mixture of biological antioxidants
15 comprises green tea solids, tocopherols, tocotrienols, carotenoids and/or vitamin C. Preferably, the mixture of biological antioxidants comprises at least two of the above antioxidants, more preferably three of them, especially preferred four of them and most preferred all
20 of them.

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Among the major carotenoids, a mixture of lutein, zeaxanthin, β -carotene, lycopene, β -cryptoxanthin, and/or astaxanthin is preferred.

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A skin care beverage composition based on high quality, catechin rich, green tea solids, bioavailable carotenoids, tocopherols, tocotrienols and ascorbic acid (vitamin C) is particularly useful as a photoprotective aid in skin
35 health. The specific combination of said biological antioxidants in the skin care beverage composition of the present invention has shown to provide a unique barrier against photooxidative damage at the point of exposure and to limit subsequent damage caused by immune response to sun damage and/or reactive oxygen species produced by exposure to the sun. In addition, this combination provides improved stability of the bioactive components. In particular, inclusion of tea solids enhances the stability of labile carotenoids and tocopherols in the

beverage during process and through shelf life.

A particularly preferred mixture of biological antioxidants comprises green tea solids, vitamin E, vitamin C and carotenoids providing perfect skin protection against photo damage, free radicals and oxidative stress.

The amount of green tea solids in the mixture of biological antioxidants is preferably in a range of 0.1 mg/serving to 20 g/serving. The amount of vitamin E is preferably in a range of 1 % DV/serving to 1000 % DV serving. The amount of vitamin C is advantageously in a range of 1 % DV/serving to 1000 % DV/serving. The carotenoids are preferably contained in the mixture of biological antioxidants in a range of 0.1 mg/serving to 20 g/serving.

The skin care beverage composition of the present invention also comprises an agent for skin nourishment comprising at least one polyunsaturated acid. Preferably, the polyunsaturated acid is an omega fatty acid.

It has been shown that best skin care results can be achieved when the agent for skin nourishment is a combination of different omega fatty acids. Preferably, the omega fatty acids are selected from omega-3, omega-6, omega-9 fatty acids and mixtures thereof. The combination of omega fatty acids provides perfect nourishment of the skin by providing precursors for lipids that improve skin barrier function.

Examples of the polyunsaturated acids (PUFAs) are eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), gamma-linolenic acid (GLA) and stearidonic acid. They may be used alone or in any combination thereof.

Preferably, the omega fatty acid(s) are present in the skin care beverage composition of the present invention in

an amount of 0.1 mg/serving to 20 g/serving.

The skin care beverage composition of the present invention may also comprise an agent for improving collagen synthesis comprises glycine, proline, hydroxyproline and/or arginine. Proline and glycine are the major amino acids constituting collagen, arginine a precursor for proline thus indirectly supporting collagen synthesis.

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As proline and glycine, in some instances also hydroxyproline, are essential elements for collagen build-up, vitamin C and copper both required for collagen processing, should be simultaneously present. Arginine in combination may augment this process.

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The amount of proline/glycine/arginine in the skin care beverage composition of the present invention is preferably in a range of 0.1 mg/serving to 20g/serving.

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Alternatively, the skin care beverage composition of the present invention comprises the above amino acids, instead of the polyunsaturated acid(s).

The skin care beverage composition of the invention preferably further comprises skin care agents selected from the group consisting of anti-inflammatory agents, anti-aging agents, hair growth agents, skin immunity agents, skin pigmentation agents, skin perfusion agents and skin repair agents.

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Examples of the anti-aging agents are vitamins such as A, C, E; carotenoids, glutathione, whey protein, metals such as selenium, zinc; and taurine. They may be used either singly or in any combination thereof.

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Skin immunological parameters may be improved by nucleotides, arginine, glutathione and carotenoids. They can be used alone or in any combination thereof.

For a skin pigmentation agent, for example, tyrosine is a suitable agent. For a skin perfusion agent, for example, arginine may be used.

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In skin repair, i.e., wound healing, the following agents are exemplarily mentioned: vitamins such as B1, B2, B6, B12, C, D, E, biotin, nicotinic acid, panthotenic acid, fatty acids such as linoleic acid and oleic acid, glutathione, carotenoids, chlorophylls and chlorophyllins (as well as copper, zinc and iron chelates), metals such as selenium, zinc and copper; taurine, tocotrienols, ellagic acid, isoflavones. They may be used singly or in any combination thereof.

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Preferred examples of hair growth agents are vitamins such as B1, B2, B6, B12, C, D, E, K; biotin, nicotinic acid, panthotenic acid, fatty acids such as linoleic acid and oleic acid, metals such as zinc; amino acids and the derivatives thereof such as glycine, cyst(e)ine taurine and methionine and proanthocyanidins. These agents may be used singly or in any combination thereof.

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The skin care beverage composition of the present invention further comprises at least one other component having skin nourishment function contributing to hydration/moisture and firmness of the skin. Said component having a skin nourishment function is selected from the group consisting of epidermal barrier function agents, coenzymes, coenzyme precursors, lipids, carotenoids, vitamins and trace elements.

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Examples of epidermal barrier function agents comprise vitamins such as B1, B2, B6, B12, C, E, K; biotin, nicotinic acid, panthotenic acid, fatty acids such as linoleic acid and oleic acid, metals such as calcium and zinc; amino acids and the derivatives thereof such as taurine, glutamin, glycine, cyst(e)ine and methionine. They may be used alone or in any combination thereof.

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The coenzymes and coenzymes precursors may comprise biotin, nicotinic acid and panthotenic acid.

- 5 The lipids suitable for skin nourishment are for example linoleic acid including γ -linoleic acid preferably from blackcurrant seed oil, and oleic acid.

The carotenoids may be selected from β -carotene,
10 zeaxanthine, lutein, β -cryptoxanthin and lycopene.

Trace elements may be selected from metals such as zinc, copper and selenium.

- 15 An additional amount of vitamin A (either as retinal or a provitamin A carotenoid) supports augmentation of collagen/connective tissue production.

According to the present invention, a skin care beverage
20 comprises the above defined composition.

The skin care beverage compositions of the invention are used for preparing a skin care beverage such as ready-to-drink, liquid concentrate and dry mix skin care beverages.

- 25 With respect to components used, it is referred to the above description on ingredients.

The skin care beverage composition of the present invention may be provided as a dry mix or as a liquid
30 concentrate. A dry mix may be obtained by spray or freeze drying of the liquid beverages prior to packaging or by uniform blending or co-agglomerating of dry ingredients. When the beverage is to be prepared for consumption, it simply can be reconstituted by the addition of a liquid
35 such as water.

A skin care dry mix or liquid concentrate may be also provided as suitable food supplements in addition to the daily food an individual is usually consuming. Examples

therefore are tablets, gellules, capsules, sirups etc.

The skin care beverage composition of the present invention may be also packaged in the form of a liquid
5 concentrate. These beverage concentrates may be provided as, for example, a syrup and/or aqueous concentrate. The beverage concentrate is typically formulated to provide a drinkable beverage composition when the concentrate is reconstituted or diluted with water or other fluid or
10 liquid such as juice.

The skin care beverage composition according to the present invention may be also provided as a ready-to-drink beverage. Such ready-to-drink skin care beverage contains
15 the above defined skin care beverage composition and a beverage base. The beverage base is a liquid or fluid suitable for diluting the composition of the present invention. Examples of beverage base are coffee, tea, juice, milk, milk substitutes, milk products such as
20 yoghurt and/or general flavored beverages on the basis of water. The amount of water, water-based liquids, milk or mixtures thereof utilized in the present ready-to-drink skin care beverage comprises at least 60 % to about 97 %, more preferably at least about 75 %, even more preferably
25 at least 80 % and most preferably at least about 83 %.

In a preferred embodiment of the present invention, a ready-to-drink beverage is a milk based skin care liquid beverage or a juice based skin care liquid beverage.
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In a further preferred embodiment of the invention, a ready-to-drink beverage is a dairy product such as a yoghurt (in scoopable or liquid form).

35 The compositions of the present invention may further comprise additional optional components to enhance, for example, their performance in providing organoleptic properties and nutritional profile. For example, one or more acidulants, colouring agents, low-caloric sweeteners,

flavoring agents, fruit/vegetable juices, preservatives, emulsifiers/hydrocolloids, oils, carbonation components and the like may be included in the compositions herein. Such optional components may be dispersed, solubilized or
5 otherwise dispersed into the present compositions.

The present compositions are made according to methods which will be well known to the person skilled in the art. For convenience, non-limiting examples of methods of
10 preparation using the compositions of the present invention are shown.

To illustrate, the compositions of the present invention may be prepared by dissolving, dispersing, or otherwise
15 mixing all components singularly or in suitable combinations together and in water where appropriate, agitating with a mechanical stirrer until all of the ingredients have been solubilized or adequately dispersed. Where appropriate, all separate solutions and dispersions
20 may then be combined. When using tea extracts which typically are pH sensitive, it is important to adjust the desired pH with an acidulant and/or buffer system before adding the tea extract to the mixture. When a shelf stable composition is desired, the final mixture can optionally,
25 but preferably, be either pasteurized, ultra-pasteurized, sterilized or filled aseptically at appropriate process conditions. Sometimes chemical preservation may also be used.

30 In making a skin care beverage, a beverage concentrate may optionally be formed first. One method to prepare the concentrate form of the beverage composition would be to start with less than the required volume of water that is used in the preparation of the beverage composition.
35 Another method would be to partially dehydrate the finally prepared beverage compositions to remove only a portion of the water and any other volatile liquids present. Dehydration may be accomplished in accordance with well known procedures, such as evaporation under vacuum. The

concentrate can be in the form of a relatively thick liquid. A syrup is typically formed by adding suitable ingredients such as electrolytes or emulsions to the beverage concentrate. The syrup is then mixed with water
5 or another aqueous fluid to form a finished beverage or finished beverage concentrate. The weight ratio of water to syrup is typically from about 1:1 to about 7:1.

The final beverage is bottled or packaged in single serve
10 containers, either in bottles, cans, or Tetrabriks. Preferably, plastic (HDPT, PET, PP) or glass bottles are appropriately sterilized before being filled by the pasteurized or sterilized beverage. Beverage concentrates and beverage concentrates would be packages in both single
15 serve multiple serve containers of the same make.

The skin care beverage composition claimed is of therapeutic value. Patients suffering from long-term sun damage or age-related skin atrophy can be effectively
20 treated by administering a therapeutically effective amount of the skin care beverage composition as defined above. The patients treated experience a rapid skin repair and skin build-up. The damaged skin gets firmer, smoother and softer with a radiant appearance.

25 Preferably, the skin care beverage composition is given as a ready-to-drink beverage. It has been shown that already after a four week treatment subjects notice improvements in their skin quality.

30 The skin care beverage composition of the present invention is also applicable in a non-therapeutic method by providing skin protection and skin nourishment to an individual who desires a balanced skin health whenever it
35 is convenient or appropriate. The skin care beverage composition of the invention is preferably simply ingested in the form of a ready-to-drink beverage containing the skin care beverage composition. The skin gets smoother, firmer and more radiant while protection from outside,

i.e., environmental stress, is provided. It has been shown that good results may be obtained after a regular up-take of the composition of the invention for six weeks.

5 Examples

The following non-limiting examples of the present composition are prepared utilizing conventional methods. The following examples are to illustrate the invention and
10 are not intended to limit its scope in any manner.

Example 1

15 A skin care beverage composition is prepared by combining the following components in a conventional manner.

<u>Components</u>	<u>wt.-%</u>
Green tea solids	0.100 - 0.60
Lutein	0.005 - 0.02
Zeaxanthin	0.001 - 0.01
β -Carotene	0.001 - 0.02
Astaxanthin	0.001 - 0.03
β -Cryptoxanthin	0.001 - 0.03
Ascorbic acid (Vitamin C)	0.6
Vitamin E (mixed tocopherols and tocotrienols)	30 IU
Polyunsaturated acids	0.01 - 0.03
Amino acids	0.00 - 5.00
Water	balance
Total	100

20 Example 2

A ready-to-drink skin care beverage is prepared by combining the following components in a conventional manner.

<u>Components</u>	<u>Wt %</u>
Juice Concentrate, 68°B	12.000 - 16.000
Blackcurrant seed oil	0.400 - 0.700
Citric Acid	0.100 - 0.250
Green Tea extract	0.040 - 0.900
Proline	0.040 - 2.000
Lutein	0.001 - 0.01
B-Carotene	0.001 - 0.02
Ascorbic Acid	0.018 - 0.600
Natural Flavors	0.100 - 0.500
Glycine	0.001 - 2.000
Arginine	0.001 - 2.000
alpha tocopheryl acetate	0.002 - 0.005
Water	Balance
Total	100%

Example 3

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A skin care liquid beverage concentrate composition is prepared by combining the following components in a conventional manner.

<u>Components</u>	<u>Wt %</u>
Juice Concentrate, 68°B	60.00
Blackcurrant seed oil	2.00
Citric Acid	0.500
Green Tea extract	1.00
Proline	5.00
Glycine	5.00
Arginine	5.00
Lutein	0.050
B-Carotene	0.080
Ascorbic Acid	1.300
Natural Flavors	1.00
alpha tocopheryl acetate	0.025
Water	Balance
Total	100%

Example 4

- 5 A milk based skin care liquid beverage is prepared by combining the following components in a conventional manner.

<u>Components</u>	<u>Wt. %</u>
gum	0.400
Juice Concentrate/fruit preparation	20.000
non-fat dry milk	4.250
pectin	0.300
Citric Acid	0.500
Green Tea Extract	0.073
Lutein	0.024
B-Carotene	0.008
Ascorbic Acid	0.018
Flavouring additives	0.200
proline	0.053
glycine	0.009
alpha tocopheryl acetate	0.004
blackcurrant seed oil	0.587
Water	Balance
TOTAL	100%

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- Beverages of Examples 1-4 were found to be palatable and refreshing. Consumers of these beverages found that their skin quality improved. Also, the components used in these
- 15 beverages were found to be more accepted compared to prior art beverages that contain skin health ingredients and or similar non-natural ingredients.

New Claims

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1. A skin care beverage composition comprising
 - a photoprotection agent comprising a mixture of biological antioxidants comprising green tea solids, tocopherols, tocotrienols, carotenoides and/or vitamin C and
 - an agent for skin nourishment comprising at least one polyunsaturated acid and/or an agent for improving collagen synthesis comprising glycine, proline, hydroxyproline and/or arginine.
2. The composition according to claim 1 wherein the polyunsaturated acid is an omega fatty acid.
3. The composition according to claims 1 and/or 2 wherein the agent for skin nourishment is a combination of different omega fatty acids.
4. The composition according to claim 3 wherein the omega fatty acids are selected from omega-3, omega-6, omega-9 fatty acids and mixtures thereof.
5. The composition according to any one of claims 1 to 4 further comprising anti-inflammatory agents, anti-aging agents, hair growth agents, skin immunity agents, skin pigmentation agents, skin perfusion agents and skin repair agents.
6. The composition according to any one of claims 1 to 5 further comprising epidermal barrier function agents, coenzyme precursors, lipids, carotenoids, vitamins and trace elements.

7. The composition according to any one of claims 1 to 6 wherein the skin care beverage composition is a dry mix.
- 5 8. The composition according to any one of claims 1 to 6 wherein the skin care beverage composition is a liquid concentrate.
9. A ready-to-drink skin care beverage comprising a
10 composition according to any one of claims 1 to 6.
10. The ready-to-drink skin care beverage according to claim 9 further comprising a beverage base.
- 15 11. The ready-to drink skin care beverage according to claim 10 wherein the beverage base is coffee, tea, juice, milk, milk substitutes, milk products and/or general flavored beverages on the basis of water.
- 20 12. A method of providing skin protection and skin nourishment to a patient in need comprising the step of administering an effective amount of a skin care beverage according to any one of claims 1 to 8.
- 25 13. The method according to claim 12 wherein the skin care beverage is a ready-to-drink-beverage.
14. The method according to claim 13 wherein the ready-to-drink beverage comprises a beverage base.
- 30 15. The method according to claim 14 wherein the beverage base is coffee, tea, juice, milk, milk substitutes, milk products and/or general flavoured beverages on the basis of water.
- 35 16. A non-therapeutic method of providing skin protection and skin nourishment to an individual comprising the step of ingesting an effective amount of a skin care beverage according to any one of claims 1 to 8.

17. The non-therapeutic method according to claim 16 wherein the skin care beverage is a ready-to-drink beverage.
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18. The non-therapeutic method according to claim 17 wherein the ready-to-drink beverage comprises a beverage base.
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19. The non-therapeutic method according to claim 18 wherein the beverage base is coffee, tea, juice, milk, milk substitutes, milk products and/or general flavored beverages on the basis of water.
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20. Use of a composition according to any one of claims 1 to 8 for preparing a skin care beverage.
21. The use according to claim 20 wherein the skin care beverage is a dry mix.
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22. The use according to claim 20 wherein the skin care beverage is a liquid concentrate.
23. The use according to any one of claims 20 to 22 wherein the skin care beverage is a ready-to-drink beverage.
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24. The use according to claim 23 wherein the ready-to-drink beverage is based on coffee, tea, juice, milk, milk products, milk substitutes and/or general flavored beverages on the basis of water.
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