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(54) Abstract Title
Cosmetic composition and methods for its production

(57) The present invention is related to a cosmetic composition used for enhancing elasticity of the skin and helping losing a weight and a method for its production in which the cosmetic composition includes various ingredients, such as calcium, potassium, iodine, selenium, alginic acid, sea salt and kaolinite or montmorillonite, extracted from either or both of brown seaweeds and sea tangles, and viscous solutions, such as inorganic silica, aluminum and magnesium, obtained from loess. The body cosmetic pigment composition provides elasticity in excessively sagged muscles, provides pliability in a body, has an effect on losing of weight, contributes to prevent the skin from aging by providing the inorganic substance, the mineral and the like for skin cells through the capillary vessel connected to the skin, and further give effects to maintain physical fitness.

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FIG. 1

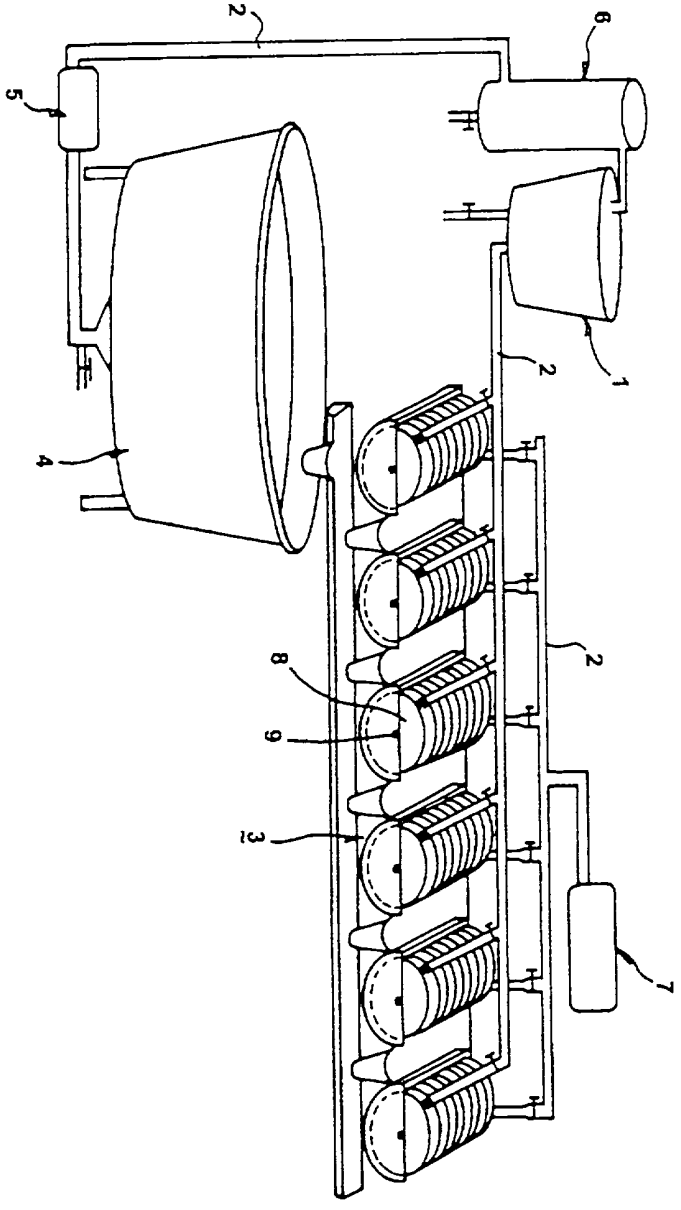


FIG. 2

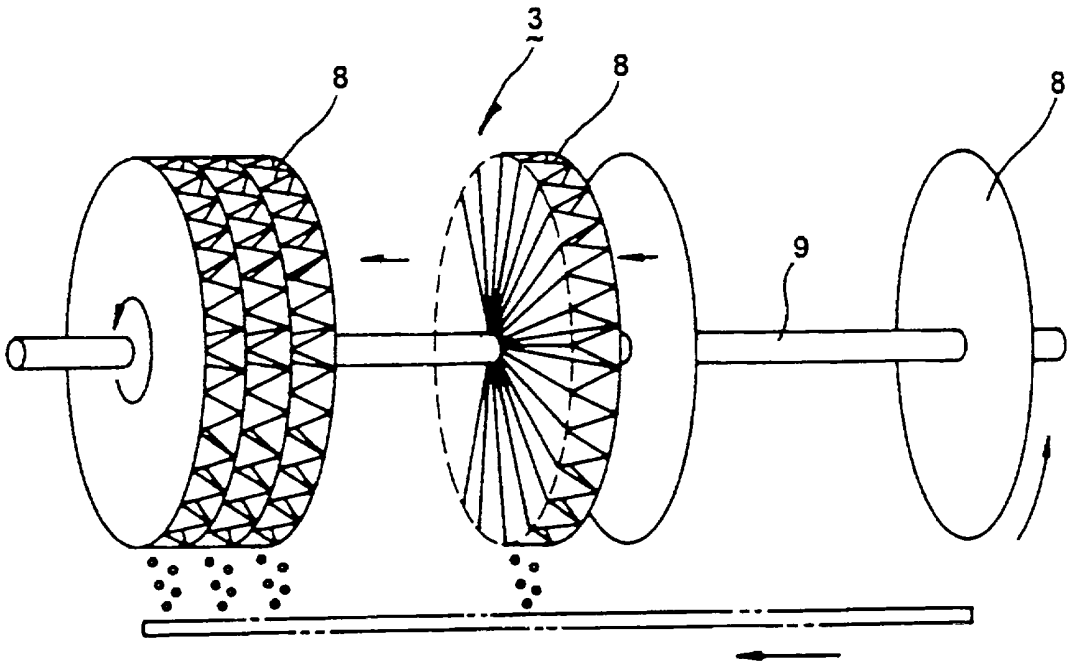
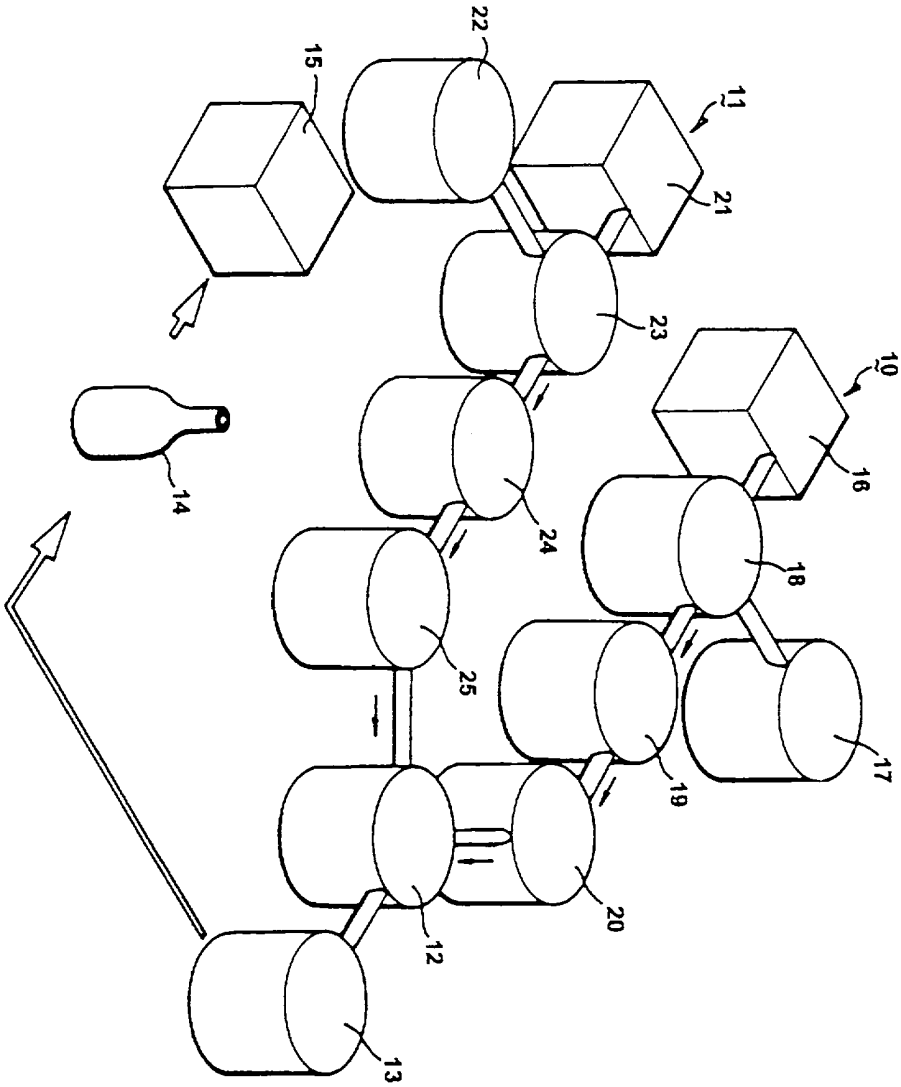


FIG. 3



BODY COSMETIC PIGMENT COMPOSITION AND ITS PRODUCING METHOD

The present invention is related to a cosmetic pigment composition and its producing method, and particularly, to a body cosmetic pigment composition for enhancing skin elasticity of body and losing a weight.

As civilization progresses, people ingest more meats than vegetables because of living conditions being abundant, and are apt to be lacking in exercise owing to convenient traffic, so increasing the number of obese people. But obesity is a major cause of various disease. Particularly, skin of belly and waist is an index of health and is taken seriously in beauty. For the foregoing reasons, there is a need for a cosmetic composition that enhances skin elasticity and help losing a weight.

The present invention is directed to a body cosmetic pigment composition and its producing method that satisfies the above needs.

An object of the present invention is to provide a body cosmetic pigment composition includes various ingredients extracted from marine plants, sodium chloride solution purified from sea water, and various inorganic ingredients obtained from loess.

Another object of the present invention is to provide the body cosmetic pigment composition, wherein the sea plants are brown seaweeds and sea tangle, and the ingredients, extracted from the marine plants, include calcium, potassium, iodine, selenium, and alginic acid, and wherein the loess is one of Kaolinite and

Montmorlillonite, and the inorganic ingredients are viscous solution including silica, aluminum and magnesium.

Still another object of the present invention is to provide a method for producing a body cosmetic pigment composition which includes a process for extracting various ingredients from marine plants and executing a series of treatment processes; a process for extracting various inorganic ingredients from loess and executing a series of treatment processes; and a process for mixing and agitating pure solutions extracted from the marine plants ingredient extracting process and the inorganic ingredient extracting process.

Further object of the present invention is to provide the method for producing a body cosmetic pigment composition, wherein the marine plants ingredient extracting process is sequentially executed by a 1st process for repeatedly executing an operation several times of freezing brown seaweeds and sea tangles in a freezer during a predetermined time and then thawing in a thawing device during a predetermined time; a 2nd process for purifying sodium chloride solution from the sea water; a 3rd process for adding the purified sodium solution to the brown seaweed and the sea tangle of the 1st process and then pulverizing them with use of a pulverizing device; a 4th process for extracting a solution of the brown seaweed and the sea tangle by eliminating solid particles from the pulverized matter of the 3rd process with use of filters; and a 5th process for extracting pure solution by inputting organic acid to the solution of the brown seaweed and the sea tangle of the 4th process, wherein the 1st process repeatedly executes an operation 1 - 5 times of freezing the brown seaweed and the sea tangle in a freezer at a range of -7°C - +3°C during 48 hours and then thawing in a thawing device at a range of 1°C - 5°C during 6 hours, and wherein the inorganic ingredient

extracting process is sequentially executed by a 6th process for extracting viscous materials such as silica, aluminum and magnesium from the loess; a 7th process for purifying sodium chloride solution from the sea water; an 8th process for mixing and agitating the various ingredients and the sodium chloride solution of the 6th and 7th processes; a 9th process for depositing sediments from the mixtures of the 8th process and then eliminating the sediments deposited in bottom; and a 10th process for extracting pure solution from the mixture of the 9th process.

FIG. 1 schematically shows a facility for extracting sodium chloride, used for producing the cosmetic pigment of the present invention;

FIG. 2 is a schematic enlarged perspective view showing a turning circular filtering unit of the sodium chloride extracting facility in FIG. 1; and

FIG. 3 is a processing flow showing a method for producing the body cosmetic pigment composition of the present invention.

A body cosmetic pigment composition of the present invention is produced by a predetermined process after mixing various ingredients extracted from marine plants, such as sea tangles and brown seaweeds, together with sodium chloride solution, silica, aluminum, magnesium, and the like. At first, characteristics of the brown seaweeds and the sea tangles and a method for extracting its solution will be explained herein.

The brown seaweed and the sea tangle contain calcium and potassium in a rich amount, specially the potassium twice as much as sodium. When ingesting plenty of

the potassium, the potassium is excreted in company with the sodium in urine, so preventing water from being supplied extremely to the interior of the body primarily.

Additionally, the seaweed and the sea tangle contain iodine in a rich amount. The iodine is closely related to the thyroid gland, so lack of the iodine may cause the thyroid gland diseases. Specially, it is known that abnormality of hormone secretion leads to gain a weight, while a functional deterioration of the thyroid gland can be prevented by ingesting the brown seaweeds and the sea tangles among the kelps.

The brown seaweeds and the sea tangles also contain selenium. The selenium exists in sea water and soil in a very small amount and is a rare mineral essential to a metabolism of the human body. In addition, the selenium is a component of glutathione-peroxidase, which prevents cells from being oxidized or broken down. Therefore, the selenium is considered as a necessary mineral for cellular functions in human body.

In particular, the seaweeds and the sea tangles contain a lot of alginic acid. According to experiments, it is known that various antibacterial materials, physiological activator, and various minerals are contained in the alginic acid, and that, when injecting the alginic acid in a laboratory rat, the level of neutral lipid and cholesterol decrease.

[Table 1] Analysis table of ingredients of brown seaweed and sea tangle

		brown seaweed(live)	sea tangle(live)
water(%)		88.8	91.0
protein(%)		2.1	1.1
lipid(%)		0.2	0.2
carbohydrate(g)	saccharide	4.4	3.6
	cellulose	0.6	0.6
lime powder(g)		3.9	3.5

inorganic matter (mg)		calcium	153	103
		phosphorus	40	23
		iron	1.0	2.4
		sodium	-	554
		potassium	-	1,242
vitamin	A	vitamin A(R,E)	308	129
		retinol(μg)	0	0
		betacarotin(μg)	1,854	774
	B	thiamine(mg)	0.06	0.03
		riboflavin(mg)	0.16	0.13
	niacin(mg)		1.0	1.1
	ascorbic acid		18	14

Also, when eating the brown seaweeds and the sea tangles, they are crushed by teeth, resolved by digestive enzymes, and then absorbed in viscera in ion state. Therefore, it is important for various ingredients of the brown seaweeds and the sea tangles to be extracted in the ion state and absorbed in capillaries through skin in a simple manner without the numerous processes, as described above.

Therefore, to extract solution, which are ions of various ingredients, from the brown seaweeds and the sea tangle is important first of all in the present invention. But, heating to about 100°C for extraction may result in breaking the physiological activator and several minerals.

In the present invention, the solution of the brown seaweeds and the sea tangles is extracted by freezing and thawing them repeatedly because it derives tissue destruction of leaf body cells so to easily extract various ingredients.

The leaf body is most easily destructed when repeatedly freezing to -7°C and

then thawing to +5°C. On the contrary, when repeatedly freezing to -3°C and thawing to +1°C, the cell tissue destruction is decreased but as acceptable degree. It is understood that the leaf body tissue cell can be destructed by generating freezing points. Then, the leaf body is grinded by a grinder, such as 'Polytron pt2000', in 6,000 revolutions per minute for destructing more than 90% of the leaf body. When grinding, it is difficult to grind the leaf body only. Therefore, for grinding the leaf body effectively, sodium chloride solution mixed with the leaf body under consideration of concentration in the leaf body, so the sodium chloride solution is at about 2.0 - 2.2% concentration. On the other hand, the brown seaweeds and the sea tangles, which are live, frozen, stored, or treated, are all available.

Secondly, roles of the sodium chloride will be explained below.

It is well known that the human body mainly consists of water. The water solves several kinds of nutritive elements and minerals, which are physiological activating materials, and intermediates physiological reactions in cells.

A total amount of water in human body is about 60 - 70% of body weight, and men generally have higher percentage of water than women, and the fat than the thin. Water in human body is referred to humor, which is divided in two classifications of intracellular humor and extracellular humor.

The intracellular humor is water existing in cells, and is occupying 2/3 of the humor. The remaining 1/3 of the humor is dispersed among the extracellular humors. Therefore, in case of an adult of 70kg in weight, a total amount of the humor is about 40L, in which about 25L corresponds to the intracellular humor and about 15L to the extracellular humor. On the other hand, the extracellular humor is divided into the blood plasma and intercellular humor, which has 1:3 ratio.

Water, which people ingest day after day, is mainly entered through oral system by drinking water or eating foodstuffs containing water. Additionally, it may be generated in the body as a product of the metabolism reaction, although it is a small amount. Usually, about 2,500ml of water enters into the human body in a day, while about 2,200ml which is 90% thereof is ingested through the oral system. On the other hand, even if amount of water, lost out of human body, changes according to circumferential temperature or movement degree, in a normal condition, about 900ml of ingested water is dispersed in the body and excreted by vaporization of respiratory organ and skin, in which human cannot feel sensually the loss of water.

One of essential factors, determining the distribution of water in human body, is an osmotic pressure. In general, water moves from hypotonic solution to hypertonic solution, which is an osmotic action. For example, when a semipermeable membrane is deposited between a sugar solution in one side and a water as a solvent in the other side, then the sugar solution cannot permeate the membrane but the water can permeate the membrane so to move toward the sugar solution. As described above, the osmotic action occurs when dividing a solution and a solvent with the semipermeable membrane. At this time, the solution indicates a peculiar pressure. The pressure is called as the osmotic pressure. The osmotic pressure is in proportion to a concentration of a solution when a temperature is constant. Solution which has equal osmotic pressure is called as an isotonic solution, and solutions which has lower osmotic pressure are called as the hypotonic solution. The osmotic pressure plays essential roles in a bio-phenomenon such as generation of edema, and a hemolysis of red corpuscles by the osmotic pressure.

The osmotic pressure means the number of particles solved in a solution per unit

volume. While the osmotic pressure of the humor can be controlled by ing the number of the particles or amount of water, a living body controls the osmotic pressure of the humor by varying the amount of water in the body. Such controlling action is achieved by a thirst or an anti-urination hormone.

Because water moves by free diffusion between cells, the extracellular humor and the intracellular humor consequently have equal osmotic pressures. If the osmotic pressure of any humor changes, water is redistributed until the osmotic pressures of both humors become equal.

A major factor for determining the effective osmotic pressure is a concentration of the sodium chloride, which consists 90% of total extracellular solute which causes the effective osmotic pressure. Therefore, the increase and decrease of the concentration of the sodium chloride accompany the change of the osmotic pressure and the cell volume.

When a person ingests water excessively more than that to be excreted, the body is in an excessive state of water. The excessive water then becomes the extracellular humor so to increase the volume of the cells and dilute the solute. Therefore, molecules of water continue moving from the extracellular humor to the intracellular humor until the osmotic pressures of both humors become equal to each other. As a result, more water is distributed in the cells rather than out of the cells, which is a water redistribution phenomenon by volume change of total humor in body.

In addition, when a person ingests a sodium chloride solution at rich concentration, the concentration of the sodium chloride in the extracellular humor is increased. At this time, although much sodium chloride enters into the cells, an excretion rate of the sodium chloride is also increased such that the increase of salt is

mainly restricted to the extracellular humor region. Therefore, while water moves until the osmotic of both humors equal to each other, the water redistribution from the intracellular humor to the extracellular humor is promoted.

Also, between the blood plasma and the intercellular humor, water and electrolyte in the blood plasma are let out of blood vessels in level of a capillary vessel by a colloidal osmotic pressure of blood plasma protein. The egress and ingress of humor are balanced by force for drawing the intracellular humor in the blood vessel inversely by the colloidal osmotic pressure of the blood plasma protein. That is a principle of the osmotic pressure. Water is prevented from excessively flowing in by making normal amount of the sodium chloride remaining in the blood plasma with use of the above principle. When applying the solution containing the sodium chloride on a sagged flesh, the concentration of the intercellular humor increases instantaneously by the sodium chloride entered into the capillary vessel. Then the increased concentration makes the water in cells move out of the cells, resulting in excreting water collected among cells through the kidneys out of body.

At third, an ion exchange for securing viscous materials will be explained. The viscous materials are no more than viscous materials extracted from loess. The viscous materials show a surprising effect to provide elasticity to the skin. The viscous materials of the loess are difficult to obtain because they are combined in ionic bonds. But, when using sea water, they are easily obtained by method of ion substitution. The viscous materials are secondary minerals fully containing minerals such as silica, aluminum, magnesium and so on.

The loess is generally designated as a part of soil which has yellow color. But the color of the soil varies according to ingredients contained in the soil. The soil is

mostly recombined in a generating process, and has various forms according to circumferential condition. The soil is generally classified in five types, such as Kaolinite, Montmorlillonite, Illite, Chlorite, and Vermiculite. The classification follows a component ratio of silica and aluminum.

The experiments of viscous characteristics of the soils show that the Kaolinite and the Montmorlillonite have distinguishable viscous effect. In special, it is shown that the viscous materials provide hard tightness on the skin when applied thereon. The degree of the tightness is Montmorlillonite > Kaolinite > Chlorite > Illite > Vermiculite. Therefore, according to the result of the experiments, it is effective to use the Kaolinite and the Montmorlillonite as a viscous material.

To obtain suitable viscous materials, the natural 'loess' are pulverized finely. They pass through a sieve two or three times so to select minute ones, then completely solving them in purified water. At this time, after throwing away unsolved ones, the solved loess is stirred and mixed with sea water, and then keeping the mixture, until the loess sinks, and the viscous mineral is extricated therefrom. Then, the loess is eliminated so to obtain the viscous mineral only. The obtained viscous mineral is mixed with ingredients extracted from the brown seaweed and the sea tangle. Then, the viscous material obtained by the ion substitution is electrically combined with the ingredients of marine plants, which are in ion state in sea water, and consequently, the viscous material-combined cosmetic pigments are obtained.

The First Embodiment

Several ingredient extraction of the brown seaweed and the sea tangle

I) raw materials

use 1kg of crude materials of the brown seaweed and the sea tangle.

ii) deodorization

remove odors by turning the raw materials with use of a concussing device at 500 - 1,000 RPM and rinsing during 60 minutes with streaming the aliquot water for taking off inherent odors of the brown seaweed and the sea tangle.

iii) destruction of leaf tissue

break down about 50% of the leaf tissue cells through generation of the freezing point by executing process three times repeatedly in which the deodorized materials are frozen in a freezer at -5°C during 48 hours and continuously thawed in a thawing device at 3°C during 6 hours, so to assist several ingredients to be extracted.

iv) adding sodium chloride solution and grinding a mixture of the leaf tissue and the sodium chloride solution

add 800cc of the sodium chloride solution(2.0 - 2.2%) therein, grind them with use of the grinder(Polytron pt2000) at 6000 RPM and pulverize about 90% of the leaf tissue, so to extract the several ingredients.

v) filtration

extract needed solution by separating and filtering the pulverized material with use of two-layer gauze.

The Second Embodiment

Sodium chloride(2.0 - 2.2%) solution purification

I) inflow of sea water

draw the sea water in a tank on the ground, and fit the concentration thereof to be 2.0 - 2.2% by measuring concentration with use of a salinity concentration measurer.

ii) purification of sea water

Preferably, a purifier, as described below, is adapted for obtaining pure sodium chloride solution by eliminating impurities in the sea water, as shown in FIG. 1 and FIG.

2.

The purifier is composed of a reservoir 1 for storing sea water to be used, turning circular filtering units 3 connected to the reservoir 1 through pipes 2, a final reservoir 4 for separating the sea water, supplied to the turning circular filtering units 3, from impurities and then storing it, a pump 5 for pumping the solution from the final reservoir 5, and a digesting filter 6 for finally filtering the solution which comes up by pumping force of the pump 5. In addition, the pipes 2, connecting the turning circular filtering units 3, are provided with a blow motor 7 for supplying air so to prevent the sea water from being contaminated by bacteria. In special, filter papers 8 in the turning circular filtering unit 3 are provided at rotating axises 9 with being constantly spaced apart for filtering impurities from the sea water.

According to the above processes, the pure sodium chloride solution is collected in the digesting filter 6 at the end via a series of the processes. The pure sodium chloride solution collected in the digesting filter 6 can be used for producing the body cosmetic pigment composition.

The Third Embodiment

Viscous material extraction from silica, aluminum and magnesium solutions

Pulverize the loess finely, sift two or three times with a sieve for selecting minute ones like sand, solve them in the purified water, throw away the unsolved ones and select the solved ones, and then dry in the shade them during about 1 hour. Then, eliminate the purified water, take the loess' sunk in bottom, mix them with the sodium chloride solution(1,000ml), agitate them during 3 - 4 hours, dry them in the shade about one day, then eliminate the loess' sunk in the bottom, add NaOH solution to a mixture processed by the foregoing steps until a pH of the mixture is about

7.0 and sudden agglutination is generated, and purify them so to obtain viscous materials in ion state.

The Fourth Embodiment

Cosmetic water

The cosmetic water is produced by uniformly mixing and agitating all of ingredients according to the Table 2 below.

[Table 2]

ingredients	embodiment 4	comparative example 1	comparative example 2	comparative example 3
1. Sodium chloride solution	by weight (to 100)	100	100	-
2. Cosmetic pigment of the first embodiment	30	-	30	30
3. Cosmetic pigment of the third embodiment	20	20	-	20
4. Paraoxybenzoic propyl	0.1	0.1	0.1	0.1
5. Colorant	suitable amount	suitable amount	suitable amount	suitable amount
6. Compounded perfume	0.1	0.1	0.1	0.1

Accordingly, the body cosmetic pigment composition, used for enhancing elasticity of the skin and losing a weight, includes various ingredients, such as calcium, potassium, iodine, selenium, alginic acid, and the like, extracted from either or both of the brown seaweed and the sea tangle, and viscous solution, such as inorganic silica,

aluminum and magnesium, obtained from the loess.

Also, as shown in FIG. 3, the method for producing the body cosmetic pigment composition includes a 11th process 12 for mixing pure solutions extracted by both a marine plants ingredient extracting process 10 for extracting various ingredients from the marine plants and then passing a series of processing steps and an inorganic ingredient extracting process 11 for extracting inorganic ingredients such as silica, aluminum, and magnesium from the loess and then passing a series of processing steps; a 12th process 13 for purifying the mixture passed by the 11th process 12; a 13th process 14 for filling the product solution passed by the 12th process in each bottle; and a 14th process 15 for packing the bottles passed by the 13th process 14 in boxes. The marine plants ingredient extracting process 10 includes a first process 16 for extracting various ingredients from the brown seaweed and the sea tangle; a second process 17 for purifying the sodium chloride solution from sea water; a third process 18 for mixing and pulverizing the various ingredients and the sodium chloride solution of the first and second processes 16, 17; a fourth process 19 for eliminating solid particles from the mixture of the third process 18 with use of the two-layer filters; and a fifth process 20 for extracting pure solution by inputting an organic acid into the mixture of the fourth process 19. The inorganic ingredient extracting process 11 includes a sixth process 21 for extracting the viscous materials such as silica, aluminum and magnesium from the loess; a seventh process 22 for purifying the sodium chloride solution from the sea water; an eighth process 23 for mixing and agitating the various ingredients and the sodium chloride solution of the sixth and seventh process 21, 22; a ninth process 24 for depositing sediments from the mixtures of the eighth process 23; and a tenth process 25 for extracting pure solution from the mixture of the ninth process 24.

Particularly, the first process 16 executes an operation one to five times of freezing the brown seaweed and the sea tangle in a freezer at a range of -7°C - +3°C during 48 hours and then thawing in a thawing device at a range of 1°C - 5°C during 6 hours for extracting the various ingredients.

Comparative test of application sensitivity and safety

The products produced according to the fourth embodiment and the comparative examples 1 - 3 are tested by 20 persons. Each of them gave points from 1 to 5, and the points are averaged. Point 5 means very excellent, point 4 means excellent, point 3 means normal, point 2 means poor, and point 1 means very poor. The results of the test will be described herein.

The fourth embodiment shows 4.5 points in application sensibility, 4.2 points in durability, and 4.6 points in safety;

the first comparative example shows 4.0 points in application sensibility, 3.9 points in durability, and 4.5 points in safety;

the second comparative example shows 4.1 points in application sensibility, 4.0 points in durability, and 4.0 points in safety;

the third comparative example shows 3.9 points in application sensibility, 3.9 points in durability, and 4.0 points in safety.

As considered through the above results, the cosmetic pigment composition of the present invention is appreciated that the application sensibility and the safety are excellent.

As described above, the cosmetic pigment composition of the present invention provides elasticity in excessively sagged muscles and has an effect of losing a weight so to provide pliability in body. In addition, the cosmetics contribute to prevent the skin

from aging by providing the inorganic substance, the mineral and the like for skin cells through the capillary vessel connected to the skin, and further give effects to maintain physical fitness.

CLAIMS:

1. A body cosmetic pigment composition, comprising various ingredients extracted from marine plants, sodium chloride solution purified from sea water, and various inorganic ingredients obtained from loess.

2. The body cosmetic pigment composition as claimed in claim 1, wherein the sea plants are brown seaweeds and sea tangle, and the ingredients, extracted from the marine plants, include calcium, potassium, iodine, selenium, and alginic acid.

3. The body cosmetic pigment composition as claimed in claim 1, wherein the loess is one of Kaolinite and Montmorlillonite, and the inorganic ingredients are viscous solution including silica, aluminum and magnesium.

4. A method for producing a body cosmetic pigment composition comprising,

a process for extracting various ingredients from marine plants and executing a series of treatment processes;

a process for extracting various inorganic ingredients from loess and executing a series of treatment processes; and

a process for mixing and agitating pure solutions extracted from the marine plants ingredient extracting process and the inorganic ingredient extracting process.

5. The method for producing a body cosmetic pigment composition as claimed in claim 4, wherein the marine plants ingredient extracting process is

sequentially executed by a 1st process for repeatedly executing an operation several times of freezing brown seaweeds and sea tangles in a freezer during a predetermined time and then thawing in a thawing device during a predetermined time; a 2nd process for purifying sodium chloride solution from the sea water; a 3rd process for adding the purified sodium solution to the brown seaweed and the sea tangle of the 1st process and then pulverizing them with use of a pulverizing device; a 4th process for extracting a solution of the brown seaweed and the sea tangle by eliminating solid particles from the pulverized matter of the 3rd process with use of filters; and a 5th process for extracting pure solution by inputting organic acid to the solution of the brown seaweed and the sea tangle of the 4th process.

6. The method for producing a body cosmetic pigment composition as claimed in claim 5, wherein the 1st process repeatedly executes an operation 1 - 5 times of freezing the brown seaweed and the sea tangle in a freezer at a range of -7°C - +3°C during 48 hours and then thawing in a thawing device at a range of 1°C - 5°C during 6 hours.

7. The method for producing a body cosmetic pigment composition as claimed in claim 4, wherein the inorganic ingredient extracting process is sequentially executed by a 6th process for extracting viscous materials such as silica, aluminum and magnesium from the loess; a 7th process for purifying sodium chloride solution from the sea water; an 8th process for mixing and agitating the various ingredients and the sodium chloride solution of the 6th and 7th processes; a 9th process for depositing sediments from the mixtures of the 8th process and then eliminating the sediments

deposited in bottom; and a 10th process for extracting pure solution from the mixture of the 9th process.

8. A cosmetic pigment composition comprising a marine plant extract, sodium chloride solution purified from sea water and an inorganic loess extract.

9. A method for producing a cosmetic pigment comprising forming an extract from marine plants and treating the extract to form a purified marine plant extract;

forming an extract from loess and treating the extract to form a purified loess extract; and

mixing and optionally agitating the purified marine plant extract and the purified loess extract.

Amendments to the claims have been filed as follows

Claims:

1. A cosmetic composition comprising a seaweed or sea tangle extract, sodium chloride solution purified from seawater, and montmorillonite or kaolinite obtainable from loess.

2. A cosmetic composition according to claim 1, wherein the seaweed or sea tangle extract comprises calcium, potassium, iodine, selenium and alginic acid.

3. A cosmetic composition according to claim 1, wherein the montmorillonite or kaolinite comprises viscous materials such as silica, aluminum and magnesium.

4. A method for producing a cosmetic composition comprising:

forming a seaweed or sea tangle extract and treating the extract to form a purified seaweed or sea tangle extract;

forming a viscous solution from montmorillonite or kaolinite and treating the viscous solution to form a purified montmorillonite or kaolinite extract; and

mixing and optionally agitating the purified seaweed/sea tangle extract and the purified montmorillonite/kaolinite extract.

5. A method according to claim 4, wherein the process of forming the purified seaweed or sea tangle extract comprises the steps of:

(i) repeatedly freezing and thawing the seaweed and sea tangle;

(ii) purifying sodium chloride solution from the sea water;

(iii) adding the purified sodium solution to the seaweed and sea tangle obtained in step (i) and pulverizing the mixture;

(iv) extracting a solution of the seaweed and sea tangle by filtering solid particles from the pulverized mixture; and

(v) extracting a purified seaweed and sea tangle extract by means of adding organic acid to the solution of the seaweed and sea tangle obtained in step (iv).

6. A method according to claim 5, wherein the seaweed and sea tangle is frozen in a freezer at a temperature of between -7°C - -3°C for 48 hours and is thawed in a thawing device at a temperature of between 1°C - 5°C for 6 hours and wherein the process of freezing and thawing is repeated between one and five times.

7. A method according to any one of claims 4-6, wherein the process of forming the purified montmorillonite or kaolinite extract comprises the steps of:

(i) extracting a viscous solution by dissolving the montmorillonite or kaolinite in purified water and eliminating the undissolved material;

(ii) purifying sodium chloride solution from the seawater;

(iii) mixing and agitating the viscous solution and the sodium chloride solution;

(iv) depositing sediments from the mixture obtained in step (iii) and eliminating the sediments; and

(v) extracting a purified montmorillonite or kaolinite extract from the mixture obtained in step (iv).

8. A method according to any one of claims 4-7, wherein the purified montmorillonite or kaolinite extract comprises silica, aluminum and magnesium.

The Patent Office

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Application No: GB 9819923.5
Claims searched: 1-9

Examiner: William Thomson
Date of search: 1 December 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): A5B (BFF, BFH)

Int Cl (Ed.6): A61K 7/48

Other: ONLINE:CAS-ONLINE, EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	US 5139771	(GERSTEIN) See claim 1 in particular	
A	US 5032408	(SCHREUDER) See abstract	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.