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(54) Title: COSMETIC COMPOSITION FOR SCRUBBING

(57) Abstract: Provided is a cosmetic composition for scrubbing comprising scrub particles for increasing skin blood flow and removing a stratum corneum by being rubbed on the skin, wherein the scrub particles are bracken spores. When the cosmetic composition for scrubbing is rubbed on the skin, a plurality of polyps formed on surfaces of the bracken spores are broken, and thus, the cosmetic composition for scrubbing does not irritate the skin and has a good feeling of use and a uniform and excellent scrubbing effect.



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Description

COSMETIC COMPOSITION FOR SCRUBBING

Technical Field

- [1] The present invention relates to a cosmetic composition for scrubbing.

Background Art

- [2] When a cosmetic composition for scrubbing is rubbed on the skin, scrub particles contained in the composition stimulate the skin, and thus, skin blood flow increases and skin elasticity increases, and also aged stratum corneum is removed, thus making the skin vivid.

- [3] In general, natural ingredients, such as dried apricot seeds, peach seeds, walnut husk, etc., which are mechanically pulverized, or spherical polyethylene powders with a particle diameter of 200-500 μ are used as the scrub particles in the scrub cosmetic composition. Alternatively, agglomerates having a size of 200-500 μ , obtained by binding synthetic polymer particles, such as polyethylene, urethane, or nylon, having a particle diameter of about 50 μ to each other can be used as the scrub particles.

- [4] However, since scrub particles made of the synthetic polymer are stiff, they cannot be easily broken when rubbed on the skin. Thus, the cosmetic composition for scrubbing containing the scrub particles made of the synthetic polymer may have a bad feeling of use and irritate the skin. Further, they cannot provide a uniform scrubbing effect. Moreover, surfaces of natural particles, such as pulverized apricot seeds are sharp and not smooth, and thus may scratch the skin.

Disclosure of Invention

Technical Problem

- [5] The present invention provides a cosmetic composition for scrubbing which does not irritate the skin and has a good feeling of use and a uniform and excellent scrubbing effect.

Technical Solution

- [6] According to an aspect of the present invention, there is provided a cosmetic composition for scrubbing comprising scrub particles for increasing skin blood flow and removing a stratum corneum by being rubbed on the skin, wherein the scrub particles are bracken spores.

- [7] The bracken spores may be added in the form of beads in which a plurality of the bracken spores are bound to each other by a binder. A coating layer may be further formed on a surface of each of the beads.

Advantageous Effects

- [8] A cosmetic composition for scrubbing including bracken spores as scrub particles

according to an embodiment of the present invention may be prepared in a formulation, such as cleansing cream, gel, foam, powders, body wash, scrub shampoo, or massage cream. It can be used for face washing, bathing, shampoo, skin massage, etc.

Brief Description of the Drawings

- [9] The above and other features and advantages of the present invention will become more apparent by describing in detail exemplary embodiments thereof with reference to the attached drawings in which:
- [10] FIG. 1 is an electron microscopic photo of cross-sections of a bracken spore used in a cosmetic composition for scrubbing according to an embodiment of the present invention;
- [11] FIG. 2 is an electron microscopic photo of a surface of a bracken spore used in a cosmetic composition for scrubbing according to an embodiment of the present invention; and
- [12] FIG. 3 is an optical microscopic photo of bracken spores in the form of beads obtained by binding a plurality of the bracken spores to each other by a binder(alginic acid).

Best Mode for Carrying Out the Invention

- [13] Hereinafter, a cosmetic composition for scrubbing according to embodiments of the present invention will be described in more detail.
- [14] Bracken is a fern widely growing from the late Devonian period of the Palaeozoic era. It grows warm and moist areas. A mature leaf of the bracken has a sporocyst having a shape of a tennis racket on its rear surface and spores grow in the sporocyst. The spores germinate to form prothalliums and a mature bracken grows in general due to the sexual reproduction by sperm cells and egg cells of the prothalliums. Spores of *Lygodium japonicum* are gathered in autumn and it is reported that these spores are used in treating urethritis and ureterolith, etc. and have therapeutic effects on hepatitis, fracture, syphilis, and prostatitis, etc. in Bon-cho-kang-mok [李時珍, 本草綱目, 1596]. Further, the use of extracts of spores of *Lygodium japonicum* as a whitening agent and the use of powders of spores of *Lygodium japonicum* as an inorganic pigment for cosmetics are reported. However, the use of bracken spores as scrub particles has not been reported yet.
- [15] The present inventors added bracken spores as scrub particles to a cosmetic composition, noticing the specific morphological structures of bracken spores and discovered that the body scrub cosmetic composition containing the bracken spores do not irritate the skin and have a good feeling of use and a uniform and excellent scrubbing effect.
- [16] Referring to FIGS. 1 and 2, a bracken spore has a spherical shape and a constant

size. An outer wall of the bracken spore is composed of polysaccharide skeleton and the bracken spore has a plurality of fine polyps on its surface. These polyps are broken by a rubbing force on the skin. The bracken spore less irritates the skin and provides more uniform scrubbing effect than the conventional scrub particle, due to its morphological structure.

- [17] Bracken spores used in a cosmetic composition for scrubbing according to the present invention may be obtained by gathering wild brackens and drying them, and then shaking and taking the spores from the dried bracken. Preferably, the spores may be sieved to have a particle diameter of 10-200 μ . When the bracken spores contain a large amount of impurities, for example, sands, the impurities may be removed by suspending the spores with the impurities in water and precipitating the impurities, collecting the spores floating in water and then drying the collected spores to obtain the bracken spores without impurities. Alternatively, the impurities contained in the bracken spores may be efficiently removed by suspending the bracken spores containing the impurities in 50-70% ethanol solution in water, leaving the suspension at room temperature for at least 24 hours, and collecting and drying the bracken spores.
- [18] When necessary, the bracken spores may be subjected to a sterilization process and a process of removing extracts. The sterilization may be performed using a conventional method, for example, ethylene oxide gas sterilization, high-pressure steam sterilization, or radiation sterilization.
- [19] Bracken spores collected from wild brackens may be in itself added as the scrub particles into a cosmetic composition. When necessary, a plurality of the bracken spores may be bound to each other by a binder to obtain beads having a size of, for example, 0.1-10 mm. Thus, the scrub intensity can be controlled. Examples of the binder includes alginic acid or alginate, polyethylene glycol (PEG), polyvinylpyrrolidone (PVP), polyvinyl alcohol (PVA), hydroxypropylcellulose (HPC), methylcellulose (MC), hydroxymethylcellulose (HMC), hydroxypropylmethylcellulose (HPMC), carboxypolymethylene (Carbopol), carboxymethylcellulose (CMC), gelatin, starch, etc. The beads may be obtained by forming the spores into spherical granulates or pellets using the binder in a conventional method. The term "beads" used herein should be interpreted to refer to all types of powders having a predetermined size, such as conventional beads and granules.
- [20] A method of preparing beads by binding a plurality of bracken spores to each other using alginic acid (or alginate) as a binder will be described by an example as follows.
- [21] 100 g of bracken spores are added to an aqueous alginic acid (or alginate) solution and stirred to prepare a sludge solution. The aqueous alginic acid (or alginate) solution may be prepared, for example, by dissolving natural polymer of alginic acid and/or alginate having a degree of polymerization of 50-2,500 and an average molecular

weight of 10,000-500,000 in room temperature water or hot water in the concentration of 0.01-5% by weight. Preferably, a ratio of the bracken spores and the aqueous alginic acid solution may be adjusted such that a weight ratio(A:B) of the bracken spores(A) and the dissolved alginic acid(B) in the sludge solution is 50:50-99:1.

- [22] Subsequently, the beads may be formed by pressing the obtained sludge solution through a tube with an internal diameter of 0.1-10 mm to add dropwise the sludge solution to a solution of multivalent metal cation. Alternatively, the beads may be formed by spraying the sludge solution or adding the sludge solution slowly to an ethanol solution while stirring. The resultant beads may be further treated with a solution of cationic surfactant, for example, a C12-20 alkyl or alkylene trimethyl ammonium salt, in order to prevent adhesion between the beads during drying.
- [23] A coating layer may be further formed on a surface of each of the beads obtained above, in order to further increase the stability of the beads in the cosmetic composition and improve feeling of use. The coating layer may be formed by spraying a solution or a suspension of a substance, such as polyethylene glycol (PEG), polyvinylpyrrolidone (PVP), hydroxypropylcellulose (HPC), methylcellulose (MC), hydroxymethylcellulose (HMC), hydroxypropylmethylcellulose (HPMC), carboxy-polymethylene (Carbopol), gelatin, starch, Shellac, or styrene-butadiene copolymer (SB copolymer), onto the beads, but the method of forming the coating layer is not limited thereto.
- [24] The bracken spores, in itself or in the form of the beads, may be added as the scrub particles to a cosmetic composition prepared in a formulation such as cleansing cream, gel, foam, powders, body wash, scrub shampoo, and massage cream. Preferably, the concentration of the bracken spores may be 0.2-20% by weight based on the scrub cosmetic composition.
- [25] The detailed description of the present invention referring to the embodiments is provided hereinafter. However, the embodiments according to the present invention can be modified in various ways and should not be understood that the present invention is restricted to the embodiments described below. The embodiments of the present invention are provided for illustration purpose only to a person having ordinary skill in the art.

Mode for the Invention

[26] Preparation Example 1

- [27] Wild brackens were gathered and dried, and then the dried spores were taken by shaking the dried brackens. The spores were sieved with a 50-mesh sieve to obtain spores with a particle size of 10-200 μ . Subsequently, the obtained bracken spores were suspended in water and left to precipitate impurities. Then, spores floating in water

were collected and dried to obtain the bracken spores without the impurities.

[28]

[29] Preparation Example 2

[30] Wild brackens were gathered and dried, and then the dried spores were taken by shaking the dried brackens. The spores were sieved to obtain spores with a particle size of 10-200 μ . Subsequently, the obtained bracken spores were added to five times volume of 70% ethanol and stirred. After fine sands were precipitated for 24 hours, the portions except the precipitates of fine sands were taken and dried to obtain the bracken spores without the impurities.

[31]

[32] Preparation Example 3

[33] 100 g of the bracken spores obtained in Preparation Example 2 was added to 4 L of a 1% sodium alginate solution (40 g of alginic acid) in water and stirred to obtain a sludge solution. Then, the sludge solution was added dropwise to a 2% CaCl_2 solution by pressing the sludge solution through a tube with an internal diameter of 3 mm to form alginic acid gel beads containing a plurality of the bracken spores. The resultant alginic acid gel beads had viscoelastic network structures. The alginic acid gel beads were filtered through a net to remove the solution, and then dried at 60-100°C. Thus, bracken spores-containing alginic acid beads with a diameter of 0.2-0.7 mm were obtained. FIG. 3 is an optical microscopic photo of the bracken spores-containing alginic acid beads obtained in Preparation Example 3.

[34]

[35] Preparation Example 4

[36] 100 g of the bracken spores obtained in Preparation Example 2 was kneaded with a solution of 10 g of polyvinylpyrrolidone (PVP K-120) and 2 g of carboxymethyl-cellulose in a mixture of ethanol and water to obtain a paste. Then, the paste was extruded through an extruder having an outlet with an internal diameter of 0.5 mm and cut into a length of 0.5 mm to obtain pellet-like granules. Subsequently, the obtained granules were dried at 60-100°C and charged into a centrifugal fluid bed coater for granulation and a solution of 5 g of Shellac and 5 g of styrene-butadiene copolymer (SB copolymer) in a mixture of ethanol and water was injected at an appropriate speed into the operating coater to form a coating layer on a surface of the granule.

[37]

[38] Preparation Example 5

[39] 100 g of the bracken spores obtained in Preparation Example 2 was charged into an electrically-powered centrifugal granulator. Then, a 10% hydroxypropylcellulose (HPC) solution in water was sprayed into a container of the granulator while rotating the container and simultaneously, the bracken spores were injected into the granulator

at an appropriate speed. The granulation was continued until appropriate spherical granules were obtained. The obtained granules were dried at 60-100°C to obtain bracken spores-containing granules with a diameter of 0.3-0.5 mm. Subsequently, the bracken spores-containing granules were charged into a bottom-up type fluid bed coater and a solution of 10 g of Shellac and 2 g of hydroxypropylmethylcellulose (HPMC) in a mixture of ethanol and water was sprayed onto the granules at an appropriate speed to form a coating layer on surfaces of the granules.

[40]

[41]

Experimental Example 1

[42]

In order to evaluate eye irritation occurring when bracken spores contact with eye mucosa, an eye irritation test were performed according to "Acute Eye Irritation/Corrosion" of OECD guideline for testing of chemicals. One eye of each of six healthy male New Zealand white rabbits (2 -3 kg) was treated once with the bracken spores obtained in Preparation Example 2 while the other eye served as a control. Degrees of damage in cornea, iris, and conjunctiva were evaluated. When eye inspection was performed 24 hours before the eye irritation test, the rabbits without eye irritation were used for the test. Since the bracken spores in the form of powders cannot be easily administered, the bracken spores were suspended in saline and 0.1 ml of the suspension containing 15% of the bracken spores was dropped in the right eye of each of the rabbits. At this time, a lower eyelid was pulled away from the eye to form a cup shape and the suspension was dropped to the conjunctival sac. Loss of the suspension was prevented by having the eye closed for about 1 second. All the animals were left without face washing. The left eye, to which the test material was not administered, served as a control. Clinical symptoms and reaction occurring in the eye were evaluated at 1, 24, 48, and 72 hours after the administration of the test material, based on the following ratings of eye lesion.

[43]

[44]

(Ratings of eye lesion)

[45]

(1) cornea: $A \times B \times 5$ maximum value = 80

[46]

(A) degree of opacity: 0- 4 (B) corneal opacity: 1- 4

[47]

(2) iris: $A \times 5$ maximum value = 10

[48]

(A) response value: 0-2

[49]

(3) conjunctiva: $(A + B + C) \times 2$ maximum value = 20

[50]

(A) flare: 0-3 (B) chemosis: 0-4 (C) secretion: 0-3

[51]

[52]

Eye irritation ratings are shown in the following Table 1.

[53]

[54]

Table 1

Evaluated value	Tentative Ocular Irritation rating
0 ~ 5	Non-irritating
6 ~ 15	Slightly irritating
16 ~ 30	Irritating
31 ~ 60	Moderately irritating
61 ~ 80	Seriously irritation
80 ~ 110	Severely irritating

[55]

[56]

When evaluated based on the ratings of eye lesion, the bracken spores had a score of 2.0 corresponding to "non-irritating". Thus, it was confirmed that the bracken spores are safe to use in eye mucosa. It was evaluated that the bracken spores were rapidly discharged by tears and thus did not induce other abnormal symptoms. 2 days after the administration, the bracken spores were not detected in the secretions of all the six animals.

[57]

[58]

Examples 1-6 and Comparative Examples 1 and 2

[59]

Cleansing creams were prepared using the components and compositional ratios listed in Table 2. In Example 1, a powder formulation composed of only bracken spores was prepared.

[60]

[61]

Table 2

Materials	Examples						Comparative Examples	
	1	2	3	4	5	6	1	2

Bracken spores	Preparatio n example 1	100	3						
	Preparatio n example 2			3					
	Preparatio n example 3				3				
	Preparatio n example 4					3			
	Preparatio n example 5						3		
Apricot scrub powders								3	
Cetostearyl alcohol			1.2	1.2	1.2	1.2	1.2	1.2	1.2
Mineral oil			40.0	40.0	40.0	40.0	40.0	40.0	40.0
Cetyl-2-ethyl hexanoate			3.0	3.0	3.0	3.0	3.0	3.0	3.0
Polysorbeate 60			1.5	1.5	1.5	1.5	1.5	1.5	1.5
Sorbitan stearate			0.5	0.5	0.5	0.5	0.5	0.5	0.5
Glycerin			8.0	8.0	8.0	8.0	8.0	8.0	8.0
Disodium EDTA			0.025	0.025	0.025	0.025	0.025	0.025	0.025
Triethanolamine			0.14	0.14	0.14	0.14	0.14	0.14	0.14
Perfume			q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
Preservative			q.s.	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.
Purified water			To 100	To 100	To 100	To 100	To 100	To 100	To 100

[62]

[63]

Experimental Example 2

[64]

Effects of removing stratum corneum were evaluated on eight samples obtained in

Examples 1-6 and Comparative Examples 1 and 2, as follows. Before applying the samples to twenty healthy male and female adults aged 20-40 years, color of an inner portion of the upper arm of each of the subjects was measured using a colorimeter (Dhroma meter, CR-200, Minolta, Japan) and eight portions on the upper arm, each having a size of width 2 cm and length 2 cm, were colored brown for 6 hours using 10% dihydroxy acetone (DHA). Then, the respective samples were applied to the colored portions and rubbed for 2 minutes with a constant force, and then washed with water. 60 minutes after the washing, colors of the colored portions were measured and the differences in colors between before and after the application of the samples were determined. Thereafter, once per day, the samples were applied to the colored portions and rubbed and washed in the same manner as described above, and degrees of decolorization were measured. The time it takes for the colored portions to return to the original skin color was measured and an average value was obtained and listed in Table 3.

[65]

[66] Table 3

Samples	Days for regeneration of stratum corneum
Example 1	10.5
Example 2	12.7
Example 3	12.8
Example 4	12.0
Example 5	12.2
Example 6	12.4
Comparative Example 1	13.4
Comparative Example 2	16.6

[67]

[68] Referring to Table 3, the powders of bracken spores itself and the scrub cosmetic compositions of cleansing creams containing the bracken spores had more excellent effects of removing stratum corneum than the scrub cosmetic compositions obtained in Comparative Examples 1 and 2.

[69] Though the cosmetic composition for scrubbing obtained in Comparative Example 1 contained apricot scrub powders as a scrubbing agent and had a relatively excellent effect of removing stratum corneum, the subjects complained they suffered from skin irritation and in some subjects, the skin was turned red after the treatment with the sample. It was assumed that the skin irritations occurred since the apricot scrub

particles were sharp and stiff.

[70] The bracken spores-containing samples obtained in Examples 1-6 hardly irritated the skin and were safe to apply to the skin. It was assumed that the non-irritation and safety of the samples were induced since surfaces of the bracken spores were smooth and the polyps were broken due to a physical force. In the case of the samples obtained in Examples 4-6, in which the bracken spores were in the form of beads obtained by binding the bracken spores to each other by a binder, the beads were also easily broken due to the physical force applied by rubbing on the skin and thus, the bracken spores were rubbed on the skin and there was no skin irritation.

[71] Accordingly, while a conventional cosmetic composition for scrubbing may be used only once per week since it irritates the skin, a cosmetic composition for scrubbing according to the present invention has little limitation to the number of use and can provide uniform effects of removing stratum corneum and facewashing.

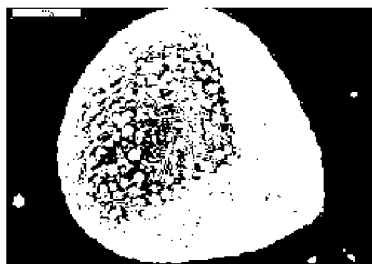
Industrial Applicability

[72] As described above, bracken spores have fine polyps on their surfaces and thus smooth surfaces and may be easily broken by a physical rubbing force. Thus, a cosmetic composition for scrubbing containing the bracken spores as scrub particles according to the present invention does not irritate the skin and has a good feeling of use and a uniform and excellent scrubbing effect. Bracken spores collected from wild brackens may be in itself added as the scrub particles into the scrub cosmetic composition. When necessary, the bracken spores may be added in the form of beads obtained by binding a plurality of the bracken spores to each other by a binder. In this case, the scrub intensity can be controlled. Further, when a coating layer is formed on each of the beads, the stability of the beads in the cosmetic composition and feeling of use can be improved.

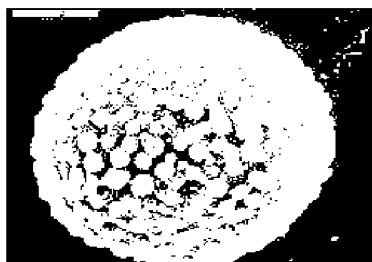
Claims

- [1] A cosmetic composition for scrubbing comprising scrub particles for increasing skin blood flow and removing a stratum corneum by being rubbed on the skin, wherein the scrub particles are bracken spores.
- [2] The cosmetic composition for scrubbing of claim 1, wherein the concentration of the bracken spores is 0.2-20% by weight based on the scrub cosmetic composition.
- [3] The cosmetic composition for scrubbing of claim 1, wherein the bracken spores have an average particle diameter of 10-200 μ .
- [4] The cosmetic composition for scrubbing of claim 1, wherein the bracken spores are added in the form of beads in which a plurality of the bracken spores are bound to each other by a binder.
- [5] The cosmetic composition for scrubbing of claim 4, wherein the binder includes at least one selected from the group consisting of alginic acid(or alginate), polyethylene glycol (PEG), polyvinylpyrrolidone (PVP), polyvinyl alcohol (PVA), hydroxypropylcellulose (HPC), methylcellulose (MC), hydroxymethylcellulose (HMC), hydroxypropylmethylcellulose (HPMC), carboxypolymethylene (Carbopol), carboxymethylcellulose (CMC), gelatin, and starch.
- [6] The cosmetic composition for scrubbing of claim 4, wherein the beads have an average particle diameter of 0.1-10 mm.
- [7] The cosmetic composition for scrubbing of claim 4, wherein a coating layer is further formed on a surface of each of the beads.
- [8] The cosmetic composition for scrubbing of claim 7, wherein the coating layer is made of at least one material selected from the group consisting of polyethylene glycol (PEG), polyvinylpyrrolidone (PVP), hydroxypropylcellulose (HPC), methylcellulose (MC), hydroxymethylcellulose (HMC), hydroxypropylmethylcellulose (HPMC), carboxypolymethylene (Carbopol), gelatin, starch, Shellac, and styrene-butadiene copolymer (SB copolymer).
- [9] The cosmetic composition for scrubbing of claim 1, which is prepared in a formulation selected from the group consisting of cleansing cream, gel, foam, powders, body wash, scrub shampoo, and massage cream.

[Fig. 1]



[Fig. 2]



[Fig. 3]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2005/000564

A. CLASSIFICATION OF SUBJECT MATTER**IPC7 A61K 7/48**

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC:A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean patents and applications for inventions since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
JICST-EPLUS(STN), PROMT(STN), CAPLUS(STN), AGRICOLA(STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 97-32833 A (PACIFIC CO., LTD.) 22 JULY 1997 see the whole document	1-9
A	KR 2003-17300 A (NAUCOS CO., LTD.) 3 MARCH 2003 see the whole document	1-9
E, A	KR 2005-47153 A (HA BYUNGCHO) 20 MAY 2005 see the whole document	1-9
A	US 2003/95940 A1 (MARY KAY INC.) 22 MAY 2003 see the whole document	1-9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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