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(54) Title: GLYCERINE PERSONAL CLEANSING BAR WITH ALKYL POLYGLUCOSIDE (57) Abstract A personal cleansing composition containing: (a) an alkyl polyglycoside of the formula (I): $R_1O(R_2O)_b(Z)_a$, wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_2 is a divalent alkylene radical having from 2 to 4 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; b is a number having a value from 0 to about 12; a is a number having a value from 1 to about 6; (b) glycerin; (c) soap; and (d) water.		

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GLYCERINE PERSONAL CLEANSING BAR WITH ALKYL POLYGLUCOSIDE**Field of the Invention:**

The present invention generally relates to personal cleansing bars. More particularly, the present invention provides for a novel cleansing bar based on alkyl polyglucoside and glycerine which combines surprisingly rich and creamy lather with exceptionally pleasing hand feel.

Background of the Invention:

Soap in bar form has long been in use for cleansing purposes. Those skilled in the art use the term soap to designate the reaction product of a carboxylic acid with a base, typically a metal hydroxide or carbonate. The resulting salt has both a polar hydrophilic end and a non-polar lipophilic end which facilitates the removal of oils and other non-polar materials from the skin or other surface in the presence of water.

Bar soaps are customarily prepared either by framing/casting or by refining/plodding. Framed or cast soaps are prepared by reacting an appropriate fat, oil or carboxylic acid with a base in the presence of water to form soap, pouring the molten soap containing about 30% water into a frame or a mold, allowing the soap to cool and harden, and removing the soap having about 20% to 25% water by weight in a bar form. Those skilled in the soap-making art are aware that the carboxylic acid hereafter referred to as a fatty acid is readily available as an article of commerce. The fatty acid also can be obtained from a fat, such as tallow or lard, from an oil, such as coconut oil, palm oil, palm kernel oil, or olive oil, or from combinations of fats and oils. Fats and oils are comprised in substantial part of glycerides of varying chain lengths, which are esters of glycerol (glycerine) and fatty acids. Under alkaline conditions, and in the presence of heat, the glycerides constituting the fats and oils break down to form fatty acid salts, also known as soaps, and glycerine.

The presence of an alkyl polyglycoside in a soap produces a bar which exhibits a richer and creamier lather and pleasant tactile properties. On refining, tallow/coco soaps containing alkyl polyglycosides were found to be too sticky and unsuitable for plodding and stamping.

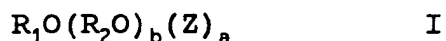
Summary of the Invention:

It has been surprisingly found that by incorporating both glycerin and an alkyl polyglycoside into a soap

composition, the resultant product produces a rich and creamy lather having exceptional tactile properties.

The present invention is thus directed to a personal cleansing composition containing:

- 5 (a) an alkyl polyglycoside of formula I:



wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_2 is divalent alkylene radical having from 2 to 4 carbon atoms; Z is a saccharide residue
10 having 5 or 6 carbon atoms; b is a number having a value from 0 to about 12; a is a number having a value from 1 to about 6;

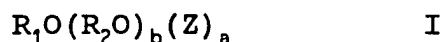
(b) glycerin;

(c) soap; and

- 15 (d) water.

The present invention is also directed to a process for making a personal cleansing composition involving the steps of:

- (a) providing an alkyl polyglycoside component of
20 formula I:



wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_2 is a divalent alkylene radical having from 2 to 4 carbon atoms; Z is a saccharide
25 residue having 5 or 6 carbon atoms; b is a number having a value from 0 to about 12; a is a number having a value from 1 to about 6;

(b) providing a glycerin component;

(c) providing a soap component;

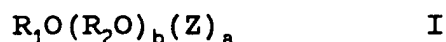
(d) providing a water component; and

(e) mixing components (a)-(d) to form a personal
cleansing composition having exceptional lathering and
5 tactile properties.

Description of the Invention:

Other than in the operating examples, or where
otherwise indicated, all numbers expressing quantities of
ingredients or reaction conditions used herein are to be
10 understood as being modified in all instances by the term
"about".

The alkyl polyglycosides which can be used in the
compositions according to the invention have the formula I



15 wherein R_1 is a monovalent organic radical having from about
6 to about 30 carbon atoms; R_2 is divalent alkylene radical
having from 2 to 4 carbon atoms; Z is a saccharide residue
having 5 or 6 carbon atoms; b is a number having a value
from 0 to about 12; a is a number having a value from 1 to
20 about 6. Preferred alkyl polyglycosides which can be used
in the compositions according to the invention have the
formula I wherein Z is a glucose residue and b is zero.
Such alkyl polyglycosides are commercially available, for
example, as APG®, GLUCOPON®, or PLANTAREN® surfactants from
25 Henkel Corporation, Ambler, PA., 19002. Examples of such
surfactants include but are not limited to:

1. APG® 225 Surfactant - an alkyl polyglycoside in which

the alkyl group contains 8 to 10 carbon atoms and having an average degree of polymerization of 1.7.

2. GLUCOPON® 425 Surfactant - an alkyl polyglycoside in which the alkyl group contains 8 to 16 carbon atoms and
5 having an average degree of polymerization of 1.48.

3. GLUCOPON® 625 Surfactant - an alkyl polyglycoside in which the alkyl group contains 12 to 16 carbon atoms and having an average degree of polymerization of 1.6.

4. APG® 325 Surfactant - an alkyl polyglycoside in which
10 the alkyl group contains 9 to 11 carbon atoms and having an average degree of polymerization of 1.5.

5. GLUCOPON® 600 Surfactant - an alkyl polyglycoside in which the alkyl group contains 12 to 16 carbon atoms and having an average degree of polymerization of 1.4.

15 6. PLANTAREN® 2000 Surfactant - a C₈₋₁₆ alkyl polyglycoside in which the alkyl group contains 8 to 16 carbon atoms and having an average degree of polymerization of 1.4.

7. PLANTAREN® 1300 Surfactant - a C₁₂₋₁₆ alkyl polyglycoside in which the alkyl groups contains 12 to 16 carbon atoms
20 and having an average degree of polymerization of 1.6.

Other examples include alkyl polyglycoside surfactant compositions which are comprised of mixtures of compounds of formula I wherein Z represents a moiety derived from a reducing saccharide containing 5 or 6 carbon atoms; a is a
25 number having a value from 1 to about 6; b is zero; and R₁ is an alkyl radical having from 8 to 20 carbon atoms. The compositions are characterized in that they have increased surfactant properties and an HLB in the range of about 10

to about 16 and a non-Flory distribution of glycosides, which is comprised of a mixture of an alkyl monoglycoside and a mixture of alkyl polyglycosides having varying degrees of polymerization of 2 and higher in progressively decreasing amounts, in which the amount by weight of polyglycoside having a degree of polymerization of 2, or mixtures thereof with the polyglycoside having a degree of polymerization of 3, predominate in relation to the amount of monoglycoside, said composition having an average degree of polymerization of about 1.8 to about 3. Such compositions, also known as peaked alkyl polyglycosides, can be prepared by separation of the monoglycoside from the original reaction mixture of alkyl monoglycoside and alkyl polyglycosides after removal of the alcohol. This separation may be carried out by molecular distillation and normally results in the removal of about 70-95% by weight of the alkyl monoglycosides. After removal of the alkyl monoglycosides, the relative distribution of the various components, mono- and poly-glycosides, in the resulting product changes and the concentration in the product of the polyglycosides relative to the monoglycoside increases as well as the concentration of individual polyglycosides to the total, i.e. DP2 and DP3 fractions in relation to the sum of all DP fractions. Such compositions are disclosed in U.S. patent 5,266,690, the entire contents of which are incorporated herein by reference.

Other alkyl polyglycosides which can be used in the compositions according to the invention are those in which

the alkyl moiety contains from 6 to 18 carbon atoms in which the average carbon chain length of the composition is from about 9 to about 14 comprising a mixture of two or more of at least binary components of alkylpolyglycosides, wherein each binary component is present in the mixture in relation to its average carbon chain length in an amount effective to provide the surfactant composition with the average carbon chain length of about 9 to about 14 and wherein at least one, or both binary components, comprise a Flory distribution of polyglycosides derived from an acid-catalyzed reaction of an alcohol containing 6-20 carbon atoms and a suitable saccharide from which excess alcohol has been separated.

The glycerin component employed in the present invention may be derived by a number of various methods. It may be obtained as a by-product in soap manufacture; by reacting propylene and chlorine to form allyl chloride which is then converted to dichlorohydrin with hypochlorous acid, which is then saponified to glycerin with a caustic solution. Other methods of derivation include the isomerization of propylene oxide to allyl alcohol, which is then reacted with peracetic acid, the resulting glycidol being hydrolyzed to glycerin; hydrogenation of carbohydrates with a nickel catalyst.

The soap component of the present invention comprises a neutralized fatty acid. The fatty acid of the soap component according to the invention can be any saturated or unsaturated, branched or linear carboxylic acid having

from 8 to 30 carbon atoms or a mixture of such acids. In a preferred embodiment of the personal cleansing composition according to the invention, the fatty acid component is a mixture of fatty acids comprised of from about 1 to about 5 39% by weight of a typical commercial grade stearic acid and from about 1 to about 39% by weight of a typical commercial grade partially hydrogenated coconut fatty acid. An example of a typical commercial grade stearic acid is EMERY® 420 Stearic Acid, a trademark product of Henkel 10 Corporation, Emery Group, Cincinnati, OH, which has an average weight percent composition of 4.0% myristic acid, trace pentadecanoic acid, 29% palmitic acid, 1.5% margaric acid, and 65% stearic acid. An example of a typical commercial grade partially hydrogenated coconut fatty acid 15 is EMERY® 621 Coconut Fatty Acid, a trademark product of Henkel Corporation, Emery Group, Cincinnati, OH, which has an average weight percent composition of 48% lauric acid, 20% myristic acid, 10% palmitic acid, 2% stearic acid, 4% caprylic acid, 5% capric acid, and 10% oleic acid. 20 Preferably, such a fatty acid is at least 95% neutralized by sodium hydroxide. The amount of fatty acid component that can be used in the personal cleansing composition according to the invention can range from about 22 to about 42% by weight, and preferably from about 27 to about 36% by 25 weight, based on the weight of the composition.

The fatty acids employed in the present invention require neutralization with some sort of base. The preferred degree of neutralization of the fatty acids is

100. The fatty acids are neutralized by a base component. Examples of suitable bases which may be employed include, but are not limited to, alkali metal hydroxides such as sodium hydroxide and potassium hydroxide.

5 In a particularly preferred embodiment, the soap component of the invention is based on a 1:1 ratio by weight mixture of stearic acid and coconut fatty acid, neutralized to 100% by sodium hydroxide.

10 According to one embodiment of the present invention, a personal cleansing composition having enhanced lathering and tactile properties is formed by combining from about 6.5 to about 25% by weight, and preferably from about 10 to about 20% by weight, and most preferably from about 16 to about 18% by weight of an alkyl polyglycoside of formula I, and preferably one wherein in formula I R_1 is a monovalent organic radical having from about 12 to about 16 carbon atoms, b is zero, and a is a number having a value of about 1.6; from about 6.5 to about 20% by weight of glycerin, and preferably from about 10 to about 16% by weight of glycerin; from about 25 to about 45% by weight of a soap, and preferably from about 30 to about 40% by weight of a soap component, and the remainder, up to 100%, water, all weights being based on the weight of the personal cleansing composition.

25 The personal cleansing composition may additionally contain auxiliaries such as, for example, perfumes, colorants, bacteriostats, preservatives, superfatting agents, and mixtures thereof.

While the present invention contemplates the use of an alkyl polyglycoside as a syndet (synthetic detergent) surfactant component, other syndet surfactants can also be used in combination with the alkyl polyglycoside. Syndet
5 surfactants suitable for use in combination with the alkyl polyglycoside surfactants set forth herein include anionic, nonionic, cationic and amphoteric surfactants and mixtures thereof. Especially useful are those surfactants which are well known to possess especially mild properties with
10 regards to skin care. Such surfactants include, but are not limited to, alkali metal salts of: alkyl isethionates such as sodium cocoyl- or lauryl isethionate; sarcosinates; sulfosuccinates; taurates and ethoxylated fatty alcohols.

The present invention will be better understood from
15 the examples which follow, all of which are intended to be illustrative only and not meant to unduly limit the scope of the invention. Unless otherwise indicated, percentages are on a weight-by-weight basis.

EXAMPLE 1

20 EXAMPLE ONE IS NOT IN > 15% APG AREA

A personal cleansing bar was prepared having the following formulation.

	<u>Component</u>	<u>%/wt.</u>
	(a) GLUCOPON® 625 (50% active)	27.9
	(b) glycerin	13.0
	(c) distilled water	21.6
5	(d) stearic acid	16.0
	(e) coconut fatty acid	16.0
	(f) sodium hydroxide pellets	<u>5.5</u>
		100.0

The bar of Example 1 was tested by a panel for flash
10 foaming, lather volume, and lather richness/creaminess on
a scale of from 1 (poorest rating) to 5 (highest rating).
The results of the panel evaluation are shown in Table 1
below.

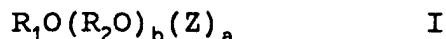
Table 1

	Flash Foam	Lather Volume	Lather Rich/Cream
15 Example 1	2.4	2.6	3.1

What is claimed is:

1. A personal cleansing composition comprising:

(a) an alkyl polyglycoside of formula I:



5 wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_2 is divalent alkylene radical having from 2 to 4 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; b is a number having a value from 0 to about 12; a is a number having a value from 1 to
10 about 6;

(b) glycerin;

(c) soap; and

(d) water.

2. The composition of claim 1 wherein in formula I R_1 is
15 a monovalent organic radical having from about 12 to about 16 carbon atoms, b is zero, and a is a number having a value of about 1.6.

3. The composition of claim 1 wherein the alkyl polyglycoside is present in the composition in an amount of
20 from about 6.5 to about 25% by weight, based on the weight of the composition.

4. The composition of claim 1 wherein the glycerin is present in the composition in an amount of from about 6.5 to about 20% by weight, based on the weight of the
25 composition.

5. The composition of claim 1 wherein the soap comprises a neutralized mixture of stearic acid and coconut fatty

acid wherein the stearic acid and coconut fatty acid are mixed in a ratio by weight of 1:1 to 4:1.

6. The composition of claim 1 wherein the soap is present in the composition in an amount of from about 25 to about 45% by weight, based on the weight of the composition.

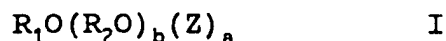
7. The composition of claim 3 wherein the alkyl polyglycoside is present in the composition in an amount of from about 15 to about 18% by weight, based on the weight of the composition.

8. The composition of claim 1 in bar form.

9. The composition of claim 1 further containing an additive selected from the group consisting of a synthetic surfactant other than an alkyl polyglycoside, a perfume, a colorant, a bacteriostat, a preservative, a superfatting agent, and mixtures thereof.

10. A personal cleansing bar comprising:

(a) from about 10 to about 20% by weight of an alkyl polyglycoside of formula I:



wherein R_1 is a monovalent organic radical having from about 12 to about 16 carbon atoms; b is 0; a is a number having a value of about 1.6;

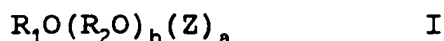
(b) from about 10 to about 16% by weight of glycerin;

(c) from about 30 to about 40% by weight of a soap comprising a neutralized mixture of stearic acid and coconut fatty acid wherein the stearic acid and coconut fatty acid are mixed in a ratio by weight of 1:1 to 4:1; and

(d) remainder, water, all weights being based on the weight of the personal cleansing bar.

11. A process for making a personal cleansing composition comprising:

- 5 (a) providing an alkyl polyglycoside component of formula I:



wherein R_1 is a monovalent organic radical having from about 6 to about 30 carbon atoms; R_2 is a divalent alkylene radical having from 2 to 4 carbon atoms; Z is a saccharide residue having 5 or 6 carbon atoms; b is a number having a value from 0 to about 12; a is a number having a value from 1 to about 6;

- 15 (b) providing a glycerin component;
(c) providing a soap component;
(d) providing a water component; and
(e) mixing components (a)-(d) to form a personal cleansing composition having exceptional lathering and tactile properties.

20 12. The process of claim 11 wherein in formula I R_1 is a monovalent organic radical having from about 12 to about 16 carbon atoms, b is zero, and a is a number having a value of about 1.6.

25 13. The process of claim 11 wherein the alkyl polyglycoside is present in the composition in an amount of from about 6.5 to about 25% by weight, based on the weight of the composition.

14. The process of claim 11 wherein the glycerin is

present in the composition in an amount of from about 6.5 to about 20% by weight, based on the weight of the composition.

15. The process of claim 11 wherein the soap comprises a neutralized mixture of stearic acid and coconut fatty acid wherein the stearic acid and coconut fatty acid are mixed in a ratio by weight of 1:1 to 4:1.

16. The process of claim 11 wherein the soap is present in the composition in an amount of from about 25 to about 45% by weight, based on the weight of the composition.

17. The process of claim 13 wherein the alkyl polyglycoside is present in the composition in an amount of from about 15 to about 18% by weight, based on the weight of the composition.

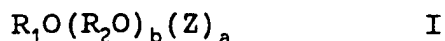
18. The process of claim 11 further comprising forming the personal cleansing composition into a bar.

19. The process of claim 11 wherein the personal cleansing composition further contains an additive selected from the group consisting of a synthetic surfactant other than an alkyl polyglycoside, a perfume, a colorant, a bacteriostat, a preservative, a superfatting agent, and mixtures thereof.

20. A process for making a personal cleansing bar comprising:

(a) forming a personal cleansing composition by combining:

(i) from about 10 to about 20% by weight of an alkyl polyglycoside of formula I:



wherein R_1 is a monovalent organic radical having from about 12 to about 16 carbon atoms; b is 0; a is a number having a value of about 1.6;

(ii) from about 10 to about 16% by weight of glycerin;

(iii) from about 30 to about 40% by weight of a soap comprising a neutralized mixture of stearic acid and coconut fatty acid wherein the stearic acid and coconut fatty acid are mixed in a ratio by weight of from 1:1 to 4:1;

(iv) remainder, water, all weights being based on the weight of the personal cleansing composition; and

(b) forming the personal cleansing composition into a bar.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US97/19314

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C11D 3/22, 9/00, 15/04, 13/00

US CL : 510/130, 119, 137, 141, 152

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)

U.S. : 510/130, 119, 137, 141, 152

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
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APS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,668,422 A (MALIK ET AL) 26 May 1987 (26-05-87), column 3, lines 45-column 4, line 58; column 5, lines 13-35; column 7, lines 33-45 and Table A.	1-9, 11-17, 19
Y	5,409,640 A (GIRET ET AL) 25 April 1995 (25-04-95), column 8, lines 41-50 and examples I-VII.	1-9, 11-17, 19
Y,P	5,631,215 A (KINSMAN) 20 May 1997 (20-05-97), abstract; column 6, line 6- column 7, line 55.	1-20
Y	US 5,312,559 A (KACHER ET AL) 17 May 1994 (17-05-94), column 2, lines 65-67; column 3, lines 5-10 and column 6, lines 10-40; column 7, lines 49-63 and examples 4-6.	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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