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PERSONAL CLEANING COMPOSITION

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This invention relates to a novel cleaning agent adapted for use as a substitute for toilet soap, shaving soap and the like, especially by persons with sensitive skins.

Extensive research over a period of years has been conducted to ascertain the cause of, and to eliminate the irritating effect of toilet soap on the skin. Various causes of such irritation have been advanced and various remedies proposed. Dryness of the skin resulting from removal of the sebum or natural oil by common soaps has led to the use of so-called super-fatted soaps as a remedy. Free alkali has for years been avoided in toilet soaps as irritating and more recently certain fatty acids have been considered objectionable. It has also been supposed that the alkaline reaction inherent even in the best toilet soaps (which contain no free alkali) is the cause of the difficulty, since it is known that the skin of normal persons is slightly acid having an average pH of about 5.5, and non-alkaline cleaning agents have been proposed for this reason.

Despite such research and the many remedies proposed, there is no personal cleaning agent available on the market today which, so far as I am aware, has solved the problem of skin irritation from soap. It is the object of my invention to provide a cleaning agent which fills that need.

My novel agent preferably contains a limited quantity of a specific type of acid, an emollient, the quantity of which may be varied to suit specific types of skins, and a detergent which is strongly emulsifying, dispersive, and preferably lathering in the acid and emollient medium yielded upon working the agent with water. Although I am not prepared to state for a certainty the chemical, physical or possibly non-allergenic properties which account for the success of my product, yet I have conclusively demonstrated its efficacy by extensive experiment with a large number of subjects.

In making my product I first prepare or obtain a material which is highly detergent, and which preferably also has high lathering properties, in an acid and emollient medium, and yet which does not yield a harmful or undesirable acid under normal conditions of storage or use of my product.

In general, detergents active in acid solution comprise sulphonated oils, sulphated alcohols, sulphonated esters, sulphonated ethers and the like, but many of these are unsuitable for my purpose. Thus, I cannot use a detergent which leaves on the skin an acid residue that is irritating to the skin as determined by so-called "patch-

tests" or by similar means well known to medical science. I have found from such tests that even a trace of sulphuric acid, if left on the skin, is highly irritating. Accordingly, I cannot use certain sulphated alcohols, sulphonated oils and sulphonated esters which, even though completely neutralized during preparation, yield sulphuric acid by hydrolysis, either on standing or when exposed to warmth and dilute acid, such as are encountered when the detergents come into contact with body warmth and acidic body secretions.

Typical examples of detergents, active in acid solution, which patch tests indicate do not liberate an acid that is irritating to the skin are the sulphonated ethers.

I prefer to employ a sulphonated ether of the type made by reacting alkylated mono-hydric phenols with polyether derivatives of ethylene oxide, ethylene glycol or propylene glycol and then sulphonating. Specifically, I prefer sulphonated ethers containing an aromatic nucleus to which is attached an iso-alkyl chain and to which a polyether chain is attached by an ether linkage. This class of detergents is characterized by good lathering properties in acid and emollient medium not possessed by many other synthetic detergents. A material of this type, made in accordance with Bruson Patent No. 2,115,192, is available in the trade under the name of Triton 720.

The manufacture of detergents of this character is well known to those skilled in the art and need not be further described since per se it forms no part of my invention.

To the detergent material I preferably add a sufficient quantity of an acid imparting material, selected, as by patch tests, as being non irritating to the skin, to impart an acidity to my cleaning agent of below pH 7 and above pH 4, preferably approximately 5.5 and within the preferred pH range of between 4.5 and 6. Any non irritating acid, determined as above noted, is operative for my purpose although it is, of course, preferable to choose one that is known to be non-poisonous when taken internally, is not malodorous, corrosive, etc. I have found that hydrochloric, acetic, lactic, citric and benzoic acids are suitable in the concentrations which I employ, as are certain acid salts and buffer solutions, such as mono-ammonium phosphate, ammonium chloride, and a solution of citric acid and di-sodium phosphate. Malic acid can be employed. Other suitable acid imparting materials can readily be determined by accepted dermatological tests.

A sufficient quantity of the acid or acid salt is

added to the detergent to bring the pH within the range above noted. Where the manufacture of the detergent includes sulphonation by the use of sulphuric acid and subsequent neutralization, complete neutralization before the addition of my acid is essential to avoid any irritant residue of sulphuric acid. However, in the event that sulphonation is carried out without the use of sulphuric acid, such as by treating an organic chloride with sodium sulphite, acidifying and subsequently neutralizing the excess acid, the desired pH may be obtained by incomplete neutralization provided the residue acid is of the non irritant character above noted.

The emollient which I preferably employ leaves a thin film of oil on the skin. To that end it may either be active in inhibiting emulsification and removal, by the detergent, of some of the natural sebum or oil, or it may replace sebum or oil that has thus been removed. For special cases the oil left by my agent may exceed the patient's normal amount of sebum or oil. Common emollients suitable for my purpose include lanolin, glycerine, olive oil, petrolatum and cetyl alcohol.

Finally, my material desirably may include a filler such as zinc oxide or talc to increase its viscosity if it is desired to merchandise the material in cream, paste, or solid form rather than as a liquid. Some emollients, such as petrolatum and paraffin, tend to increase viscosity and may dispense with the need for a filler and when they are used it is desirable to add an emulsifying agent such as oxycholesterol to stabilize the cream.

A preferred formula for a cleaning agent embodying my invention is as follows:

Triton 720.....	1250 grams
Petrolatum.....	250 grams
Paraffin.....	50 grams
Oxycholesterol.....	15 grams
Lactic acid (U. S. P. <u>X</u>)	5-20 minims for acidity pH 4.5 to 6

The Triton, which is a thin paste, is thickened by evaporating it over a water bath until the weight is reduced to about 85% of the original material. While the material is being heated, it is stirred and thoroughly mixed.

The petrolatum, paraffin and oxycholesterol are melted together over a hot water bath while being constantly stirred with a glass rod.

The detergent properly thickened is added to the oils while hot, a small amount at a time, with constant stirring. The materials are kept hot while mixing. When about half or two-thirds of the detergent has been added, the mixture thickens to a creamy white paste.

After complete mixing the batch is slowly stirred while cooling. When cooled the acid is added and thoroughly mixed. The mixture should then be rapidly stirred at intervals during the next twenty-four hours by which time the mixture will have congealed to a thick, creamy paste. At this point the pH should be measured and more acid added if needed. The cream is tubed while cold.

The emollient content of my agent may be varied considerably depending upon the type of skin of the user. Indeed for persons with very oily skin it may be eliminated entirely. For others with exceptionally dry skin it may be increased, and for that purpose I prescribe increasing the petrolatum about one-fourth or the addition of lanolin.

My preferred form of cleaning agent has high

lathering or sudsing action when worked with water, despite the presence of acid and emollient and this action is not inhibited in hard water or even in salt water. This lathering characteristic is an important one not only from the aspect of salability, but also as to its utility for special purposes. Thus, persons whose skins are irritated by common soap are similarly affected by ordinary shaving soaps and my cleaning agent is most effective for use as such. It can also be used, if desired, as a shampoo, although I do not regard shampoos as presenting the same skin irritation problems as do cleaning agents for use on other parts of the body, particularly the face.

A cleaning agent can readily be made in accordance with my invention for use as a face cream which will give the same softening effect as ordinary face creams, but with far better cleaning action. Thus, such a cream prepared in accordance with my invention would be made as above described except that it preferably would contain a larger or different emollient content and might include wax, ceresin, spermaceti, mineral oil, or other ingredients commonly used in face creams. A cream so prepared can be left on the face overnight with beneficial effect to the skin, but I prefer to remove the dirt from the skin immediately after application of the face cream, by lathering the cream and rinsing. After drying the face in the usual manner, a residual film comparable to an oily face cream is left on the skin despite the thorough cleansing effected.

The preferred embodiment of my invention which has been described above, can be varied considerably to suit the needs of individual users without departing from the spirit of my invention which is to be limited only as the appended claims require. In those claims when I speak of a substance as being non-irritating (or the like), I mean that the substance, even after long standing, contains no acid which, in the quantities herein employed, will irritate a normal skin when tested by accepted dermatological methods well known in the art and not described herein since they form no part of my present invention. Although I have limited my description to certain specific detergent and acid-imparting materials which my tests have shown to be non-irritating, there are doubtless many others which have been, or can readily be, determined to be non-irritating by the same well known tests. In the event that it is desired to use a material other than one herein disclosed as preferred, such testing would be a necessary step in the manufacture.

I claim:

1. A personal cleaning composition consisting of a non-irritating acid-imparting material and the sulphonated ether product of the reaction of an alkylated mono-hydric phenol with a poly-ether derivative of a material chosen from the group consisting of ethylene oxide, ethylene glycol and propylene glycol, said composition, when worked with water, yielding a solution having a pH below 7 and above approximately 4 which is not irritating to the skin.

2. A personal cleaning composition consisting of a non-irritating acid-imparting material, an emollient and the sulphonated ether product of the reaction of an alkylated mono-hydric phenol with a poly-ether derivative of a material chosen from the group consisting of ethylene oxide, ethylene glycol and propylene glycol, said composition, when worked with water, yielding a solution having a pH below 7 and above approximately 4 which is not irritating to the skin.

3. A personal cleaning composition consisting of an acid chosen from the group consisting of acetic, lactic, citric and malic acids, and the sulphonated ether product of the reaction of an alkylated mono-hydric phenol with a poly-ether derivative of a material chosen from the group consisting of ethylene oxide, ethylene glycol and propylene glycol, said composition, when worked with water, yielding a solution having a pH below 7 and above approximately 4 which is not irritating to the skin.

4. A personal cleaning composition consisting

of an emollient; a non-irritating acid-imparting material chosen from the group consisting of acetic, lactic, citric and malic acids, and the sulphonated ether product of the reaction of an alkylated monohydric phenol with a poly-ether derivative of a material chosen from the group consisting of ethylene oxide, ethylene glycol and propylene glycol, said composition, when worked with water, yielding a solution having a pH below 7 and above approximately 4 which is not irritating to the skin.

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