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Hand Creams and Lotions

THE PRESENT DAY cosmetic market has many forms of hand products. Gone are the days of glycerine and rose water formulations. The most popular among the hand products are hand cream and hand lotion.

The popularity of these products relates to their genuine need—for either prevention of a rough, dry skin or treatment of such condition. Whatever the need may be, they are time-tested and have come to be a part of a cosmetic consumer's life.

The most common cause of roughened dry skin is generally accepted as long repeated contact with water alone or detergent solutions, particularly in cold water.

Through a series of fundamental experiments conducted by Blank it was established that water content of the stratum corneum is all-important in the maintenance of normal, soft, flexible skin.

Now, the treatment of dry skin involves the use of basic ingredients identified as emollients. It may be more or less defined as *an agent which, when applied to a dry or inflexible corneum, will effect a softening of that tissue by inducing rehydration.* This would immediately lead us to think of water as an ideal emollient. But the difficulty here is in its application. Only a thin film of water can be retained on the skin. As a result of which evaporation takes

into a liquid and solid portion by a series of pressings. The solid phase is made up of saturated fatty acids with higher molecular weight like stearic and palmitic. Commercial "triple pressed" stearic acid generally consists of a combination of 55% palmitic and 45% stearic acids. The liquid phase consists of oleic, linolic, and myristic acids. The three grades of stearic acid: triple pressed, double pressed and single pressed represent the pressing during separation.

In hand cosmetics the triple pressed grade is generally favoured, sometimes double is employed where pearly sheen and softer consistency are desired. The single pressed is hardly used because of its high percentage of unsaturated fatty acids which have a tendency to cause rancidity.

Stearic Acid obtained by Solvent Crystallization

Stearic acid obtained by this process involves fractional crystallization of solid fatty acids from solvent solution and the successive crystallization determines the degree of purity of the final product. A commercial grade similar to triple pressed stearic acid can be obtained by this method.

Stearic Acid obtained by Hydrogenation

Nearly pure fatty acids can be obtained by a combination of hydrogenation and fractional distillation. And commercial stearic acids with 97% stearic acid content are now available.

Stearic Acid obtained by Fractional Distillation

The fatty acids obtained after fat splitting may be separated into compounds with different chain lengths by fractional distillation. However, oleic and stearic having the same chain length are distilled at the same temperature and to obtain pure stearic acid first, a solvent crystallization or a pan press method is necessary to get rid of the oleic acid before fractional distillation.

With newer methods available for making commercial fatty acids it was possible to obtain stearic acids of different stearic content. Further, it was found in hand cream formulations that by substituting stearic acid with a different stearic content for the commercial

lose), the clays (e.g. bentonite and veegum), and the synthetic polymers (e.g. polyvinyl alcohol) which produced hydrophobic protective colloids. Although these agents have emulsifying properties, they are not primarily emulsifiers but fill in the role of emulsion and suspension stabilizers. They also serve as aqueous phase thickeners. When calculated on a dry basis, they were usually used in proportions under 1% in hand creams and lotions. These colloids were prepared as aqueous solutions or dispersions just before production since sufficient time is needed for their hydration.

PRESERVATIVES

Hand creams and lotions contain water and other ingredients, which are susceptible to attack by microorganisms. Hence the absolute necessity for a good preservative. The following are the properties for a good preservative.

1. It must be effective against all types of microorganisms causing decomposition.
2. It must be soluble internally or externally.
3. It must not be toxic internally or externally.
4. It must be compatible; must not alter the character of the preparation as far as objectionable odour, colour, taste, and other properties are concerned; and must be practically netural so that it will not alter the pH of the preparation.
5. Its cost should not increase the price of the preparation to any marked extent.
6. Its inhibiting effect must be lasting; therefore it may not be possible to depend on volatile substances, the effects of which disappear after evaporation.

Over the years many preservatives have been tried but have been discarded for one reason or the other. For example, benzoic acid, sodium benzoate, and sodium propionate have been successful in acid medium only; therefore they are of no use in creams and lotions that are slightly alkine in nature. Salicylic acid was considered, but discarded because of its skin irritation potential. However,

Part B

Glycerol	12	—	8	—	—	15	10
Lauryl colamino formyl methyl pyridinium chloride	—	—	—	—	—	—	5
Methyl paraben	0.15	0.15	0.1	0.1	0.15	0.1	0.1
Polyethylene glycol 300 monostearate	—	—	—	—	—	—	—
Propylene glycol	—	10	—	—	—	—	—
Potassium hydroxide	1	0.6	—	—	—	—	—
Quince seed mulcage (2% solution)	—	25	—	—	—	—	—
Sodium lauryl sulphate	—	—	1	—	—	—	—
Sorbitol	—	—	—	3.5	3	—	—
Triethanolamine	—	0.3	—	—	—	—	—
Water	68.85	46.9	67.9	76.9	68.85	71.4	64.9

Formulas for Hand Lotions

Part A

Cetyl alcohol	0.5%	0.5%	—	—	—	—	1.5%
Glyceryl monostearate	—	—	1%	4%	—	1%	—
Isopropyl palmitate	—	—	4	—	—	3	—
Lanolin	—	—	—	—	1%	1	—
Lanolin absorption base	—	—	—	1	—	—	—
Mineral oil	—	—	—	—	—	—	3
Polyethylene glycol 400 distearate	—	—	2	—	—	—	—
Propylene glycol monostearate	—	—	—	—	4	—	—
Nimlesterol or Amerchol L-101	—		—	—	7	—	—
Stearic acid	3	5		1.5	—	—	2