

PREPARATION OF A SKIN CREAM

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OBJECTIVE:

- To become familiar with the composition of a simple skin cream.
- To deduce the purpose of some of the components in a skin cream.

APPARATUS AND CHEMICALS:

- stearic acid
- lanolin (anhydrous)
- mineral oil
- triethanolamine
- 150-mL beaker (4)
- 250-mL beaker (4)
- beaker tongs
- stirring rod
- hot plate
- thermometer, 110°C or equivalent

INTRODUCTION:

The function of a skin cream is to protect the skin against harshness from the environment and any dry conditions of the skin. A skin cream should aid the skin in carrying out its normal functions, that is, restoring moisture to dry skin, allowing the elimination of waste matter through the pores, and the cooling of the body by evaporation of water (perspiration) and radiation, thus aiding in the maintenance of the normal body temperature. If the cream clogs the pores of the skin with heavy, insoluble, inert material, it results in a thick sticky coating on the skin and prevents sufficient normal skin function, being detrimental to health.

Skin creams contain a variety of ingredients that range from common, such as mineral oil, to the exotic, such as placenta extract. Some skin creams may contain small amounts of vitamins or other “nutrients”. A basic and satisfactory skin cream can be prepared from stearic acid, lanolin, mineral oil, triethanolamine, and water. The purpose of this experiment to prepare a skin cream from these ingredients, and, then, by omitting one of the ingredients in subsequent preparations, to deduce the purpose of that particular ingredient. Skin creams contain ingredients for adding body, improving texture, emulsifying the oil and water components, raising the melting point, improving the spreadability, improving the odor, softening the skin, and providing various medicinal properties.

PROCEDURE:

Prepare 4 skin creams as described in the procedure below. Use the ingredients and amounts shown in Table 1. Label each mixture.

Ingredient	Mixture 1	Mixture 2	Mixture 3	Mixture 4
Stearic acid	10 g	10 g	10 g	—
Lanolin	7 g	7 g	7 g	7 g
Mineral oil	10 g	10 g	—	10 g
Triethanolamine	2 mL	—	2 mL	2 mL
Water	48 mL	48 mL	48 mL	48 mL

TABLE 1 Composition of Skin Cream Mixtures

Place a 150-mL beaker on a balance and weigh it. Weigh the quantities of stearic acid, lanolin, and mineral oil, called for in Mixture 1, in Table 1, above, into the 150-mL beaker. Heat the beaker in a water bath until all the ingredients have melted. (Cosmetic ingredients should not be melted over a direct flame or high heat because they may scorch or decompose if they are heated much above the boiling point of water.) Keep this mixture warm while heating the water-triethanolamine mixture in the next step.

Measure 48 mL of water into a 250-mL beaker. Measure the amount of triethanolamine, as called for in Mixture 1, to the water in the 250-mL beaker. Stir. Heat this mixture to a temperature of 80° to 90°C. The mixture may be heated directly on a hot plate on medium heat or in a water bath.

After the water solution has reached a temperature between 80° and 90°C, remove it from the heat and slowly pour the melted stearic acid-lanolin-mineral oil mixture into the water a little at a time, stirring constantly. It may be helpful to hold the 250-mL beaker using a pair of beaker tongs. (Note: If the “oil mixture” has solidified, heat briefly on the water bath to remelt it.) If you pour too fast or if you do not stir, your emulsion will be lumpy. Continue stirring until you have a smooth, uniform paste. Label the beaker as “Mixture 1”, and set the skin cream aside to cool.

Repeat the procedure to make another skin cream using the quantities of materials called for in Mixture 2, in Table 1, above. Label that as “Mixture 2”.

Prepare two more skin creams using the quantities of materials called for in Mixture 3 and Mixture 4 in Table 1, above. Remember to label each mixture.

After the skin creams have cooled, compare the properties of each cream prepared. Note which ingredient is missing in each preparation. Based on the difference between the properties of a normal skin cream (Mixture 1) and those of each of Mixtures 2, 3 and 4, determine the function of the missing ingredient.

You may take your skin cream home.

Commercial skin creams usually contain fragrance so they have a pleasant odor. If desired, you may add perfume to the skin cream to produce a pleasant odor. (Perfumes and colognes are either alcohol or oil-based solutions of mixtures of essential oils, from plant or animal origin, that produce an overall pleasant smell. Perfumes are preferred over colognes since they tend to be more concentrated.) Only a few drops of perfume will be needed to produce a mild, pleasant odor. Add the perfume one or two drops at a time and stir well to blend it into the skin cream until the desired level of odor is obtained.

REPORT FORM

PREPARATION OF A SKIN CREAM

Name _____ Course/Section _____

Partner's name (if applicable) _____ Date _____

Describe the general properties of the normal skin cream (Mixture 1).

Describe the general properties of Mixture 2.

Describe the general properties of Mixture 3.

Describe the general properties of Mixture 4.

What is the function of each of the following ingredients? Explain, based on the results you obtained for Mixtures 2 through 4

Stearic acid.

Mineral oil.

Triethanolamine.

Examine the list of ingredients on the labels of two commercial skin creams, preferably from different manufacturers. Can you identify the possible functions of the ingredients in this preparation?

Brand of skin cream _____

Ingredients (list below)

Function of ingredient

Brand of skin cream _____

Ingredients (list below)

Function of ingredient

What are the major similarities and differences in the two commercial skin creams?