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Formulation and Evaluation of Emollient Cream

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Abstract: *Emollients and moisturizing have the quality of softening or soothing the skin. Creams the skin. The term' moisturizer' is frequently used synonymously with emollient, but moisturizers frequently contain humectants that hydrate the stratum corneum. Blankness is constantly linked to an disabled function observed, for illustration, in atopic skin, psoriasis, ichthyosis, and contact dermatitis. Emptiness and skin barricade conditions are not a single reality, but are characterized by differences in chemistry and morphology in the epidermis Moisturizers have multiple functions piecemeal from dampening the skin. analogous to other actives, the efficacy is likely to depend on the lozenge, where compliance is a great challenge faced in the operation of skin conditions. Strong odor from constituents and slithery compositions may be disagreeable to the cases. Likewise, low pH and sensitive responses, from lactic acid and urea for illustration, may reduce patient acceptance. Once applied to the skin, the constituents can stay on the face, be absorbed into the skin, be metabolized , or vanish from the face by evaporation, sloughing off, or by contact with other accouterments . In addition to substances considered as actives,(e.g. emulsifiers, antioxidants, preservatives). Recent findings indicate that actives and excipients may have more pronounced goods in the skin than preliminarily considered.*

Keywords: metabolized , low pH and sensitive responses , multivitamin and other Ingredients.

I. INTRODUCTION

Cosmeceuticals are derived from two word ' cosmetics ' and ' pharmaceuticals " Cosmeceuticals are products that act as both cosmetics and medicines and combine cosmetic products with pharmaceutical products. Theseutilized as cosmetics as they claim to enhance appearance . Cosmeceutical products have measurable therapeutic efficacy on the skin , as drugs and formulations have diversified from skin to body to hair and they are used for the treatment of various conditions like hair damage , wrinkles , photo aging , skin dryness , dark spots , uneven complexion , hyperpigmentation , and so on . Proteins / peptides Hydroxy acids Depigmentation agents Antioxidants Cosmeceuticals)
Retinoid Moisturizers Growth factor 2 Sun screens

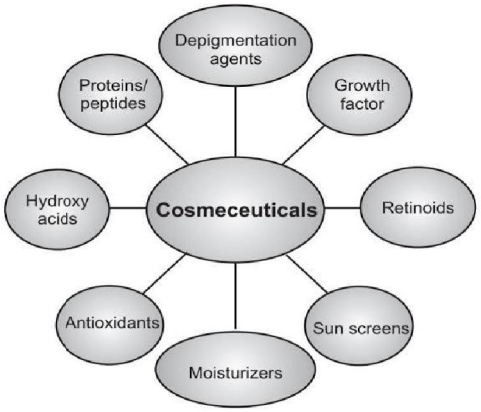

Image No. 1 Cosmeceuticals

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HISTORY OF COSMACEUTICAL

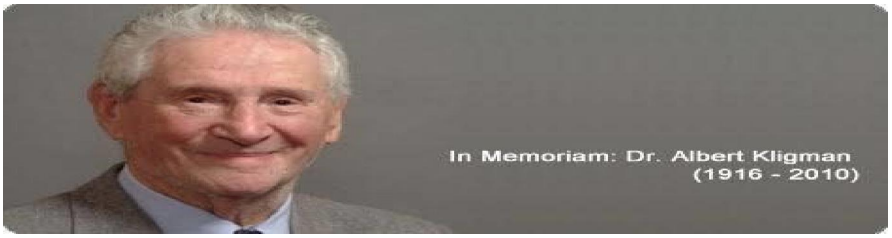

Image No. 2 Albert Kligman

ALBERT KLIGMAN

- The health- giving property of cosmetics was first linked by the Egyptians.
- The cosmetics were first used by Egyptians in 4000B.C whose records are being available. Up to the morning of 19th century, there was no clear separation between cosmetics and medicinals, the separation passed when the first ultramodern medicinal assiduity was developed.
- In 1961 the term Cosmeceuticals was chased by the Raymond Reed, launching member of the United States Society of Cosmetic druggist.
- Albert Kligman in 1971 developed a formula to ameliorate the appearance of UV damaged and wrinkled.
- In 1980's there was a rapid-fire expansion of the Cosmeceuticals due to hydroxyl acid(natural fruit acids) used as exfoliates against wrinkles.
- World- famed dermatologist Dr. Kligman made a long lasting donation to the world of skincare by discovering that topical retinoic acid(or tretinoin) can be used for both an acne and wrinkle treatment. Kligman may be described as the father of Cosmeceuticals, a term he vulgarized. But Cosmeceuticals first appeared in the world request in 1996.

Types of Emollient Cream

1. Classification by Generation (Chronological/Functional)

Dermatological research often categorizes emollient formulations into three distinct generations based on how they interact with the skin barrier:

- **First Generation (Occlusives):** These are inert, hydrophobic substances that form a physical film on the *stratum corneum*. They do not add moisture but reduce **Transepidermal Water Loss (TEWL)** by up to 99%.
  - *Examples:* Petrolatum, liquid paraffin, lanolin.
- Second Generation (Humectants): These are hygroscopic molecules that actively draw water from the dermis into the epidermis or from high-humidity environments into the skin.
  - *Examples:* Glycerin, Urea, Hyaluronic Acid, Lactic Acid (AHA).
- **Third Generation (Physiological Lipids):** These are "barrier-repair" emollients. They contain the specific lipids naturally found in the skin's lamellar bilayers to provide long-term structural repair rather than just temporary occlusion.
  - *Examples:* Ceramides (1, 3, 6-II), Cholesterol, and Polyunsaturated Fatty Acids (PUFAs).

2. Classification by Ingredient Function

A high-quality research paper should distinguish between the three functional categories that make up a "moisturizing system."

Category	Primary Function	Research Significance
Emollients (Proper)	Fills the gaps between desquamating corneocytes (skin cells).	Smoothes skin texture; improves "hand-feel" and patient compliance.

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Category	Primary Function	Research Significance
Occlusives	Provides a vapor-resistant barrier.	The primary tool for decreasing TEWL in compromised barriers.
Humectants	Increases the water-holding capacity of the *stratum corneum*.	Essential for treating "dehydrated" skin; often requires an occlusive "seal."

3. Classification by Clinical Formulation (Rheology)

The vehicle (delivery system) dictates the **bioavailability** of the ingredients and the rate of absorption.

- **Ointments (Anhydrous):** Semi-solid, oil-based (e.g., White Soft Paraffin). They are the most effective for severe xerosis (dryness) but have the lowest patient adherence due to greasiness.
- **Creams (Oil-in-Water):** Emulsions that are more cosmetically acceptable. They require preservatives (like parabens or phenoxyethanol), which can be a variable in contact dermatitis research.
- **Gels & Lotions (Water-based):** High water content. These provide a cooling effect through evaporation but can sometimes exacerbate dryness if they lack sufficient occlusive agents.

4. The "Emollients Plus" Category

This is a modern academic designation for emollients that include **bioactive non-medicated additives**. In your paper, this section would cover current trends in "Dermocosmetics":

- **Microbiome Modulators:** Ingredients like *Vitreoscilla filiformis* or prebiotic sugars that restore the skin's microbial diversity.
- **Anti-Pruritic Agents:** Additives like Polidocanol or Glycyrrhetinic acid that specifically target the "itch-scratch cycle" without using topical steroids.
- **Natural Moisturizing Factor (NMF) Substitutes:** Formulations that replace the skin's amino acids and salts lost through frequent washing or environmental stress.

Application of Emolient Cream :-

1. The "Soak and Seal" Method

The most evidence-based application protocol in academic literature is the **Soak and Seal** technique, which maximizes hydration by manipulating skin physics.

- **Hydration Phase:** The patient bathes in lukewarm water (approx. **32°C to 35°C**) for 10–15 minutes. This increases the water content of the *stratum corneum* through simple immersion.
- **The 3-Minute Rule:** Research indicates that emollients must be applied within **3 minutes** of exiting the water.
- **Mechanism:** Applying an occlusive layer while the skin is hyper-hydrated traps the absorbed water molecules before they can evaporate, which would otherwise lead to "evaporative cooling" and further xerosis (dryness).

2. Quantitative Application: The FTU Standard

To ensure reproducibility in clinical trials, researchers use the **Finger-Tip Unit (FTU)** to standardize dosage.

- **Definition:** 1 FTU is the amount of cream expressed from a nozzle (5mm diameter) that extends from the distal skin crease to the tip of an adult index finger.
- **Mass Equivalency:** Approximately **0.5g**.
- **Anatomical Scaling:**
  - **Hand and Foot:** 2 FTUs ($1.0g$)
  - **Arm:** 3 FTUs ($1.5g$)
  - **Leg:** 6 FTUs ($3.0g$)
  - **Trunk (Front and Back):** 14 FTUs ($7.0g$)

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3. Directional Application (Rheology & Folliculitis)

The mechanical action of applying the cream is a significant factor in preventing adverse effects.

- **Downstroke Technique:** Emollients should be applied in smooth, downward strokes following the direction of hair growth.
- **The "Rubbing" Variable:** Vigorous rubbing creates friction-induced heat, which can exacerbate pruritus (itching). Furthermore, aggressive circular motion can force cream into the hair follicles, leading to **occlusive folliculitis**, a common complication in emollient therapy.

4. Frequency and Maintenance

In chronic conditions like Atopic Dermatitis, application is divided into two phases:

1. **Reactive Phase:** High-frequency application (up to **4–6 times daily**) to restore a severely compromised barrier.
2. **Proactive (Maintenance) Phase:** Twice-daily application even when the skin appears "clear." Research shows this significantly extends the time between flares and reduces the need for topical corticosteroids (**the "steroid-sparing effect"**).

5. Summary of Clinical Best Practices

Factor	Recommendation	Rationale
Quantity	Adult: $250g$–$500g$ per week	Prevents sub-therapeutic dosing.
Temperature	Applied to cool/tepid skin	Heat causes vasodilation and increased itching.
Cleanliness	Use a pump or clean spatula	Prevents bacterial contamination of the emollient tub.
Timing	Post-bathing and before sleep	Maximizes nocturnal barrier repair.

EMOLLIENT CREAM

Meaning Smoothly or quieter, an emollient softens dry, rough, flakey skin, making it look and feel more. When the top subcases of your skin doesn't contain enough water, it dries out.

This causes skin to crack and slip off, leaving open spaces between the cells in your skin. Emollients fill those spaces with adipose substances, called lipids, which make your skin smoother and softer.

Emollients that contain a lot of oil painting are also occlusive agents. This means they cover your skin with a thin unctuous film that seals the water in your skin. Occlusive agents keep your skin doused longer.

Although numerous people suppose an emollient and a moisturizer are the same thing, they aren't. An emollient is one of the constituents in a moisturizer. The other constituents in a moisturizer bring water into your skin. Emollients are the part of a moisturizer that keep your skin soft and smooth.

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Image No. 3 Emollient Cream

GENERAL INGREDIENTS OF EMOLLIENT CREAM

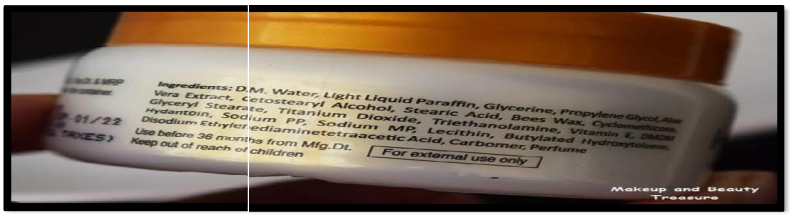

Image No. 4 General Ingredients of Emollient Cream

Water: This is the most important and extensively used raw material in any cream expression. These are the cheapest and fluently available. In skin creams, water is used as detergent to dissolve other constituents of creams. Water is used in medication of creams. Water can also form mixes,

Oil, fates and waxes: Oil, fats and waxes , fats and waxes and derivations there form comprise an essential portion of creams. Waxes act as an emulsifier, fats act as a thickener and oil painting act as a incensing agent, preservative, etc. according to its function. oil painting may be two types ' mineral and glyceride

Mineral oil: Mineral oil painting Mineral oil painting consists of hydrocarbons deduced from petroleum oil painting. Mineral oil painting is clear, odorless, and heavily refined oil painting and it's extensively used in cosmetics. It's feather light and affordable, it helps to reduce water loss from the body and keeps the body moisturized. A number of mineral canvases are used in cream expression.

Glyceride oil: Glyceride oil is mostly vegetable oils. Examples of glyceride oils are almond oil, arachis oil, castor oil, coconut oil, olive oil etc.

Vegetable oil: Form a barrier on the surface of the skin and slow down the loss of water, helping to maintain plumpness of skin. Vegetable oils may also be used to increase the thickness of the
Almond oil, germ oil, avocado oil, sunflower oil etc.

Waxes: Waxes are used in cosmetics because it helps to keep an emulsion from separation of oil and liquid components. These waxes also increase the thickness of the lipid portion and stick to the surface of the skin.

Fats: Different types of fats are used in the medication of creams. These accoutrements can be attained from creatures, shops or mineral origin. Glyceride canvases and fats may be of creatures or vegetable origin. They correspond of combinations of advanced adipose acids and glycerin.

Lanolin: It's deduced from hair fat of a lamb. Lanolin are of two types- the hydrous lanolin contains between 25- 30 water. Anhydrous lanolin has point of 38 °C 42 °C and has a slight odour

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Colours : Colours Before the development of the ultramodern technology, colours primarily came from substances set up in nature similar as turmeric, saffron, indigo, etc. After the 19th century, colours were made in the laboratory and were set up to be much more stable with lesser colouring intensity. They also could be produced without using shops gathered in the wild.

Humectants: Humectants These are important multi-functional constituents set up in utmost skin care phrasings. Humectants are hygroscopic organic composites. These has numerous benefits similar as moisturization, exfoliation, etc. exemplifications of humectant are glycerin, Hydroxyethyl urea, betaine, sodium PCA, Sodium- LLactate, etc

Perfumes: Perfume is a substance that imparts a scent or order, including a sweet and pleasant smell. Examples of natural perfumes used in creams are-

Vitamins: Vitamins plays an important role in maintaining the physiological function of whole body and the skin. Vitamin A, C, E etc. are generally used in formulation of the creams.

USES OF EMOLLIENT CREAM

This drug is used as a moisturizer to treat or help dry, rough, scaled, itchy skin and minor skin vexations(similar as diaper rash, skin becks from radiation remedy).

Emollients are substances that soften and moisturize the skin and drop itching and flaking. Some products(similar as zinc oxide, white petrolatum) are used substantially to cover the skin against vexation (similar as from stuffiness)

Dry skin is caused by a loss of water in the upper subcases of the skin. Emollients moisturizers work by forming an unctuous subcase on the top of the skin that traps water in the skin

Petrolatum, lanolin, mineral oil painting and dimethicone are common emollients. Humectants, including glycerin, lecithin, and propylene glycol, draw water into the external subcase of skin.

An help you to break the itch and scrape cycle with a 24 hour moisturizing action. using very hot water when you bathe or shower

Image No. 5 Use of Emollient Cream

PREPARATION OF EMOLLIENT CREAM

1.The oil soluble components and the emulsifier are

2. Taken in one beaker and melted in a water bath at 75°C.
3. And in other beaker water, preservatives and watersoluble
4. Components are taken and melted at 75°C.
5. After heating, the oil phase was taken in a mortar and
6. Pestle and slowly the water phase was added and
7. Triturated till clicking sound was heard. Finally, when
8. The temperature cools down, perfuming agents and/or
9. Preservatives are added. In this preparation, water
10. Content will be more than the oil.
11. The oil soluble components and the emulsifier are taken in one beaker and melted at 75°C. And in another beaker water

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12. And water soluble components are taken and melted at 75°C. After melting, water phase are taken in mortar and pestle
13. And slowly oil phase was added and triturated till clicking
14. Sound was heard. And when the temperature of the cream
15. Will get cooled, then the perfuming agent are added.

EVALUATION PARAMETERS OF CREAM

Determination of pH: The pH of the cream can be measured on a standard digital pH meter at room temperature by taking adequate amount of the formulation diluted with a suitable solvent in a suitable beaker

Physical appearance: The physical appearance of the cream can be observed by its color , roughness and graded.

Spread ability: Spread capability Acceptable quantum of sample is taken between two glass slides and a weight of 100gm is applied on the slides for 5 twinkles. Spread capability can be expressed as,

$S = m * l / t$ Where, m = weight applied to upper slide. 1 = length moved on the glass slide. T = time taken

Saponification value: 2gm of substance refluxed with 25 ml of 0.5 N alcoholic KOH for 30 min, to this 1ml of phenolphthalein added and titrated immediately, with 0.5N HCl, note the reading as 'a'. Repeat the operation omitting the substance being examined.

Note the reading as 'b'.

Saponification value = (b-a)*28.05/w Where, w = weight of substance in gram.

Acid value: Acid value 10 gm of substance is dissolved in directly counted 50 ml admixture of equal volume of alcohol and solvent ether, the beaker was connected to influx condenser and sluggishly hooted , until sample was dissolved fully, to this 1 ml of phenolphthalein added and titrated with0.1 N NaOH, until noiselessly pink color appears after shaking for 30 seconds. Acid value = n *5.61/ w

Viscosity: Viscosity of formulated creams can be determined by using Brookfield Viscometer

Homogeneity: The formulation was tested for the homogeneity by visual appearance and by touch.

Removal: The ease of removal of the creams applied was examined by washing the applied part with tap water.

Dye test: The scarlet dye is mixed with the cream. Place a drop of cream in a slide and cover with a cover slip and examine it under a microscope. If the disperse globule appears red and the ground colorless then it is o/w type and the reverse condition appears in w/o type of creams

STERILITY STORAGE AND LABELING INFORMATION

STERILITY

- It Should be Sterile, it complies with the test for sterility

STORAGE :-

- It Should not be Permitted to freeze.

LABELING INFORMATION

- The label information should contain
- Manufacture and expiration date .
- Conditions under which the it should be stored , Where Applicable
- Name of any added antimicrobial preservative .

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II. CONCLUSION

Creams are semisolid formulations widely acceptable by the society. Research and development for the formulation of pharmaceutical creams for wound healing purpose has grown in recent decades owing to its obvious benefits . With the progress in thepharmaceutical field and industry , it is assured that pharmaceutical creams will still be an interesting and appealing area of research for years to come .

More advanced technologies and methods will be used for preparation , formulation and evaluation of creams in coming years . The demand of herbal constituents – based creams are also increased day by day

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