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# FORMULATION AND EVALUATION OF MOIZTURISING CREAM

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#### Abstract:

Consumers have long used moisturisers to soften their skin, making them one of the most popular preparations in cosmetics. Moisturisers are an efficient way to fight dry skin, which can cause stinging, tingling, soreness, tightness, and itching. This review's objective is to assess published research on the origins, components, manufacturing methods, properties, applications, and uses of moisturisers. Moisturisers are used to improve the appearance and health of the skin, bridging the gap between consumer products and medical. In the future, the ability to customise certain agents to meet particular dermatological needs will be essential in moisturiser treatment. By raising the water content in the stratum corneum, moisturisers achieve their most important cosmetic goals of keeping the pH of the skin normal and making the skin smooth.

#### Introduction

Excellent moisturisers must provide exceptional hydration and be well-liked by consumers. This might be challenging since skin feels sticky after using good moisturising products. Particularly for the face, moisturisers must be quickly absorbed, non-greasy, and non-tacky. The predominant product form is oil-in-water emulsions based on polymer-stabilized lamellar gel networks because of its better moisturising and skin-feeling properties.

The appearance of wrinkles and fine lines can be reduced by up to 30% using a decent moisturiser. For anti-aging claims to be approved by the FDA and categorised as cosmetics, they must be connected to skin look and moisture. Therefore, moisturising performance is essential.

Since the hands and lower legs are particularly prone to dry, flaky skin, good moisturising performance is especially important for lotion compositions intended for these regions. Repairing the skin's barrier function due to persistent subclinical skin irritation is another significant advantage of moisturisers. This is a year-round occurrence that plays a major role in skin ageing. All anti-aging and skin-repair active ingredients should thus be combined with an excellent moisturising base formulation.

#### History of Moisturizer

Ancient Egypt is where the earliest evidence of cosmetics may be found, despite the fact that they have undoubtedly been there for far longer. Using them as anti-wrinkle lotions, the ancient Egyptians thought these items, especially frankincense, possessed anti-aging qualities. Jain et al. (2009) also noted that as early as 10,000 BC, Egyptian men and women used scented oils and ointments to smooth and cleanse their skin and cover up body odour. The Romans and Greeks imported and used Egyptian customs.

Chalk, white lead, and crocodile faeces were frequently used by women to improve the look of their skin. Additionally, they believed that using starch and eggs to make face masks would tighten the skin, minimise wrinkles, and maintain the face's young appearance. Incense, cedar, and cypress resins were used in ointments that were administered at night. To cure the skin, cinnabar and lead acetate (white lead) were used (Hg).

In the first viral cream, beeswax was melted and mixed with rose oil and water. Topical formulations, commonly referred to as creams, have been a mainstay of cosmetics since ancient times. A cream may be a pharmacological or cosmetic product depending on the method used. Unmedicated creams are frequently used for a variety of skin disorders. Creams in the past were prepared by combining two or more ingredients.

#### Advantages

- In addition to lowering the likelihood of skin issues, Moisturizing can also lessen the visibility of other imperfections.
- Moisturizing helps your skin stay young.
- Moisturizing fights wrinkles.
- It's the perfect end to a hot shower.
- Non-irritating when applied to the skin.
- Easily water washable.
- Less greasy compared to ointment.9. Easy to spread on the skin's surface.

#### Disadvantages

- Their stability is inferior to that of ointment, and because they are less hydrophobic than other semi-solid preparations,
- There is a greater chance of contamination.
- Some medicines have poor skin permeability.
- Only suitable for medications that need a very low plasma concentration to function
- allergic responses are possible.

#### **Ideal properties**

- Reduce and prevent further TEWL.
- Restorelipid barrier, i.e., duplicating and enhancing the skin's moisturizing retention mechanisms.
- Hypo-allergenic, non-sensitizing, fragrance free.
- Absorbedimmediately, providing immediate hydration.
- Cosmetically acceptable

#### THERAPEUTIC USE OF MOISTURIZERS

There are numerous advantages to moisturisers for dermatoses linked to dry skin. Environmental and personal factors interact in intricate ways to cause dry skin. Atopic dermatitis, eczemas, ageing, chemical exposures, microorganisms, low humidity, low ambient temperature, and psychological stress are all contributing factors.23 to 25 This review focusses on the therapeutic application of moisturisers for a variety of dematitis, including contact, atopic, seborrhoeic, and nummular dermatitis.

#### WHAT IS MOISTURIZER?

It's interesting that there is disagreement over what constitutes a moisturiser. Marketers coined this phrase to highlight how it moisturises the skin. 1. Even though they also contain occlusives and humectants, moisturiser and emollient are frequently used interchangeably. Emmolents are primarily composed of lipids and their constituents, which bridge the gaps between intercorneocyte clusters to improve skin hydration. Humectants, the final category of moisturisers, are made up of hygroscopic compounds that enhance the stratum corneum's ability to absorb water by drawing moisture from the dermis and a humid atmosphere into the epidermis. Two The right choice and consistent use of moisturisers are key factors in their effectiveness.

#### WHY DO WE NEED MOISTURIZERS?

A healthy skin appearance is crucial because a poor appearance can lower one's sense of self-worth.3 Commonly used to smooth, hydrate, and minimise fine lines, moisturisers can enhance a patient's social life, psychological well-being, and overall quality of life.

Furthermore, the best results from using moisturisers may be obtained by both normal skin and dermatoses that cause symptoms of dry skin. Dryness and discomforts, such as tightness, pain, itching, stinging, and tingling, are among these symptoms.

In order to combat dermatoses caused by dry skin, moisturisers are an effective way to break the cycle of dry skin while preserving skin suppleness. Beyond just keeping skin hydrated, moisturisers offer a number of other advantages. For example, moisturisers may serve the following purposes:

#### 1. Anti-inflammation –

Certain moisturiser ingredients, including glycyrrhetinic acid, palmitoyl-ethanolamine, telmesteine, Vitis vinifera, ceramide-dominant barrier repair lipids, and filaggrin breakdown products, have significant anti-inflammation qualities thanks to a variety of mechanisms, including inhibiting cyclooxygenase activity and reducing the production of cytokines and proinflammatory prostanoids, which soothes irritated skin, like that of dermatitis.1–2,4–8 This review will go into more detail about each substance later on.

#### 2. Antipruritic:

Water-based moisturisers soothe the skin's surface by allowing water to evaporate. Some moisturisers also include menthol as an additive, which cools the skin and lessens itching.

#### 3. Antimitotic:

Low-grade epidermal antimitotic qualities found in mineral oils provide therapeutic benefits for dermatoses like psoriasis that exhibit elevated epidermal mitotic activity.

4. It has been shown that hyaluronic acid promotes wound healing.

#### HOW DO MOISTURIZERS WORK?

The skin acts as a barrier, shielding the underlying tissues from chemical irritation, mechanical stress, infection, and desiccation. Reduced function causes a rise in trans-epidermal water loss, which is linked to a number of dermatitis types.

In order to hydrate the stratum corneum cells, water from the deeper epidermal layers travels upward before evaporating. In order to keep skin supple and avoid drying out, the water content of the epidermis is crucial.

Although the lipid bilayers of the stratum corneum serve as a barrier against moisture, the majority of compounds applied topically can still enter through them. A combination of hygroscopic substances that help corneocytes retain their moisture is their natural moisturising component. Production of natural moisturising factors is closely correlated with external humidity; half of these factors are amino acids derived from the keratinocyte protein filaggrin, while the other half are salts such as lactates, urea, and electrolytes.

In stratum corneum with low moisture content. When the stratum corneum has less than 10% water content, corneocytes build up on the skin's surface and become discontinuous, resulting in dry skin symptoms. Twelve moisturisers.

Applying a moisturiser also helps to smooth the skin's surface by filling in the gaps left by partially desquamated skin flakes and re-establishing the intercellular lipid bilayers' capacity to absorb, hold, and redistribute water. The mechanics of the skin then alter as water increases the breakdown of corneodesmosomes, reducing the buildup of corneocytes and encouraging their continuation.14. Loden5 comes to the conclusion that skin care products enter the skin to affect its structure and function in addition to being dormant on its surface.

#### CLASSIFICATION

Based on their mode of action, moisturisers may be divided into four major categories.

- 1. Emollients
- 2. Humectants
- 3. Occlusives
- 4. Protein rejuvenators

#### 1. Emollients:

Mostly lipids and oils, these substances moisturise and enhance the softness, suppleness, and smoothness of the skin. Example: Fatty acids, squalene, pseudoceramides, and cholesterol

#### 2. Humectants:

Since they are essentially hygroscopic chemicals, water is drawn to them from two sources: the environment in humid circumstances and from the dermis into the epidermis. Glycerol, propylene glycol, urea, alphahydroxy acids, panthenol sorbitol, and hyaluronic acid are a few examples.

#### 3. Occlusives

Transepidermal water loss is physically stopped by oils and waxes that create an inert barrier on the skin.

#### 4. Protein revitalizers

It is believed that small molecular weight proteins aid in skin renewal by restoring vital proteins. such as keratin, elastin, and collagen.

#### MECHANISIM OF ACTION

• A process called transepidermal water loss causes water in the human body to continuously evaporate from the skin's deeper layers. a barrier against viruses, debris, or harm. Between the corneocytes lies a lipid bilayer that determines the ability to retain moisture. The active components in moisturisers, which fall into one of two categories—occlusives or humectants—modify the rate of water loss.

· The impact increases with the formulation's occlusiveness.

• For a few hours, applying a coating of petroleum jelly to normal skin will cut that loss by 50-75%. This similar method is used to moisturise by the

body's natural oils.

Water can be absorbed by humectants. They can pull water from the dermis into the epidermis, which makes the skin drier, but they can also absorb this water from the air and moisturise the skin when the humidity is higher than 70%.

The primary function of moisturisers is to enhance the water content of the SC through their moisturising activity. Additionally, it softens, pliablely extends, and extends the skin's surface. Emollients' moisturising properties are noticeable for no more than 30 to 1 hour after application and often persist for 4 hours.

• Anti-inflammatory action: By inhibiting cyclooxygenase activity, several moisturisers stop the formation of pro-inflammatory prostanoids, which soothes irritated areas. Combat microorganisms on the skin's surface using antimicrobial activity.

• Low-grade anti-mitotic action: Mineral oil-based moisturisers have a beneficial effect on the epidermis in inflammatory dermatitis, when there is an increase in epidermal mitotic activity.

• The antipruritic effect lessens irritation. Additionally, utilising water-based moisturisers has an antipruritic effect due to the cooling impact that causes water to evaporate from the skin's surface.

• Protective action: Nowadays, moisturisers that offer extra sun protection include sunscreens with variable SPF.

#### Particular Components in Moisturisers

The use of botanical ingredients in topical treatments dates back thousands of years. Moisturising creams contain natural components like aloe (leaf extract from Aloe barbadensis Miller) and allantoin (comfrey root).

• Antioxidants: By interacting with free radicals and preventing the chain reaction, these substances prevent components from oxidising.

Chelating agents: Although they don't have much antioxidant power on their own, citric acid, tartaric acid, ethylenediaminetetraacetic acid, and their salts increase the effectiveness of antioxidants by interacting with heavy metal ions.

• Vitamins: The evidence for them is weak.

Colouring chemicals can sometimes cause irritating dermatitis, but they can add subtle colours and other visual qualities that increase acceptability. The purpose of preservatives is to either eradicate or stop the growth of germs that may have been unintentionally introduced during production or usage. The most often utilised emulsifying agents are nonoxinols. The more recent method of dispersing liposomes into the epidermis to deliver the active

#### **Review of the Literature:**

components for improved activity.

1. Prashant Chavan, Mallinath Kalshetti, and Nikil Navindgikar claim that Extractions of the leaves of Nyctanthes arbor-tristis, Zingiber officinale, and Eugenia caryophyllus that have the ability to relieve pain are made into creams. The cream was created using the slab technique and then assessed using a number of criteria, including its viscosity, phase separation, physical characteristics, PH, spreadability, washability, and non-irritancy test. The results were positive.

2. Madhuri Baburao Pawar and Tejswini Devidas Navgire claim The created cream demonstrated good consistency and spread ability, homogeneity, pH, non-greasy properties, and no phase separation during the research period, according to the aforementioned data. Because they are seen to be safer and have fewer adverse effects than synthetic ones, natural therapies are more widely accepted. Nowadays, there is a high demand for herbal cosmetics, and the benefits of herbs in cosmeceuticals have been further enhanced in personal care systems. Using plant extracts to create a non-toxic, safe, and effective moisturising lotion that increases patient compliance would be far more acceptable than using synthetic ones.

3. According To Rajendra Gyawali, Rupesh Kumar Gupta, Sahana Shrestha Rajendra Joshi Prem Narayan Paudel A topical polyherbal cream with a strong antioxidant property was prepared in this research. The formulated cream with a pH of 5.50 has non Newtonian positive thixotropic flow property.

#### Aim:

To formulate a stable and effective moisturizing cream and evaluate its physicochemical properties and performance.

#### **Objectives:**

To formulate a cream using suitable emollients, humectants, and emulsifiers.

To evaluate parameters such as pH, viscosity, spreadability, stability, and moisturizing effect.

To understand the principles of topical formulation and emulsification.

Plan of work :-



#### Data analysis and Report Preparation

#### **Materials and Methods**

#### Materials:

The materials used in the formulation of a moisturizing cream typically include the following: 1. Humectants: Glycerin

2. Aqueous Phase: Purified water

3. Preservatives: Methylparaben

4. Fragrance (optional): Suitable cosmetic-grade fragrance

#### Method:

1. Preparation of Oil Phase: Heat stearic acid, cetyl alcohol, liquid paraffin, and other oil-soluble components in a beaker to about 70–75°C.

2. Preparation of Aqueous Phase:

Dissolve glycerin, preservatives, and other water-soluble ingredients in purified water in a separate beaker and heat to the same temperature (70-75°C).

#### 3. Emulsification:

Slowly add the aqueous phase to the oil phase with continuous stirring to form an emulsion.

4. Cooling and Homogenization: Stir continuously while cooling to room temperature. Add fragrance if used, and homogenize until a smooth cream is formed.

5. Packaging:

Transfer the cream into suitable containers and label appropriately.

#### FORMULATION

GLYCERINE	-	6 g
OIL	-	25 g
DISTILLED WATER	-	60 g
EMUSIFIRE WAX	-	9 g
PRESERVATIVE		





#### Preparation of moisturizer

- To prepare this simple face and body moisturizing cream Using
- 5 basic ingredient we neeed .
- We need beaker or heat resistance cup 60 gram distilled water
- If you wish ,you can replace distilled water with hydrosolof your Choice
- 6 gram glycerine as we want to keep this recipe very simple
- We used to most common humectant that is easy to find Glycerine
- (humectant ) give cream its moisturizing properties
- · Humectants are water loving ingredient that attract retain Moisture from their surrounding Mix it well ,this is our water phase
- Cover the beaker with aluminium foil so that water does not evaporate during heating
- Keep the beaker aside and move on to prepare the oil phase For the oil phase , we also need a heat resistance cup 25 grams oil.
- If you plan to use this mosturising cream on your face ,please Choose an oil that will not clog your pore Will leave a list of oil that do not clog pores in description box below
- 9 grams emulsifier wax , for water and oil to mix , we need an emulsifier, there are hundread of emulsifier and choosing the right one depend on type of creamor lotion you want to have
- Before choosing an emulsifier ,you have to consider the consistency of the cream the quantity of oil to be added does it need a co emulsifier the ph of cream ,compatibility with
  - Other ingredient it an oil in water or water in oil emulsion cover the beaker with aluminium foil so that no dirt falls into it
- The next step is to heat the oil phase and water phase respectively to around 70 degree celsius For the water and oil to mix we have to melt and heat the emulsifier and oil and heat water to about the same temperature.
- I heat they using the double boiler method.
- I can control the temperature of the oil phase because the emulsifier melt at about 70 degree elsius
- To control temperature of the water phase, then I place both beaker into a pot half filled with water, when both phase are ready to remove beaker from water bath, then pour the hot water phase into hot oil phase Mix for about 30 sec with hand mixer for two min. if the emulsion still look watery mix again for few sec.
- The emulsion will slowly thicken as it cool down ,after 30 min it has finally thickened and transfere into cosmetic container

#### Evaluation

#### a. PH measurement:

It was then standardised using pH 4.0 and 7.0 standard buffers prior to usage, and the average of three triplicates was calculated.

#### b. Spread ability:

i. The following method was used to ascertain the test samples' spread ability: A second glass plate was set on top of the 0.5 g test formulation, which was positioned inside a circle with a pre-marked diameter of 1 cm.

#### c. Viscosity:

For rheological investigations, a Brookfield Synchro-Lectric Viscometer (Model RVT) equipped with a helipath stand was utilised. After allowing the 50 g sample to equilibrate in a beaker for five minutes, the dial reading was measured at 10, 20, 30, 50, 60, and 100 rpm using a T-D spindle. The viscometer's matching dial reading was recorded at each speed.

#### Thermal stability

i. + Thermal stability (at 20 °C, 30 °C and 40 °C) of the prepared formulations was determined according to Indian standard guideline.

#### b. Measurement of particle size:

i. A laser diffraction particle size analyser (Mastersizer Hydro 2000 MU, Malvern Instruments) was employed for measuring the globule size distribution of the emulsion droplets. Briefly, the sample was dispersed in 0.2 micron filtered distilled water to obtain an obscuration of 5-15%.

#### c. In vitro occlusivity test:

- i. These beakers were then placed at  $37\pm2$  °C/607 $\pm5\%$  RH for 48 h.
- ii. The occlusion factor F was calculated as- F=(A-B) $A \times 100$

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