

A SHORT REVIEW ON: PHARMACEUTICAL CREAM FOR SKIN CARE

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ABSTRACT

Creams are considered an essential part of ornamental product as topical specifics from time immemorial due to their ease of operation to the skin and also their junking. From cosmetic purposes, pharmaceutical creams have a various type of operation analogous as sanctification, beautifying, altering appearance, moisturizing. to skin protection against bacterial, fungal infections as well as mending cuts, becks, injuries on the skin. These semi-solid specifics are safe to use by the mortal and society. The mortal skin is easily vulnerable to injury but it has the capability to heal on its own. still, the natural healing process can take time and there is also trouble of infection especially in the early stages of injury. In this review, we have concentrated on the

use of topical drug delivery system i.e., pharmaceutical creams for moisturizing with det ailed discussion relating to the other parcels, suitable styles of drug of creams, their type predicated on their function, their advantages and disadvantages, characteristics and the various types of creams.

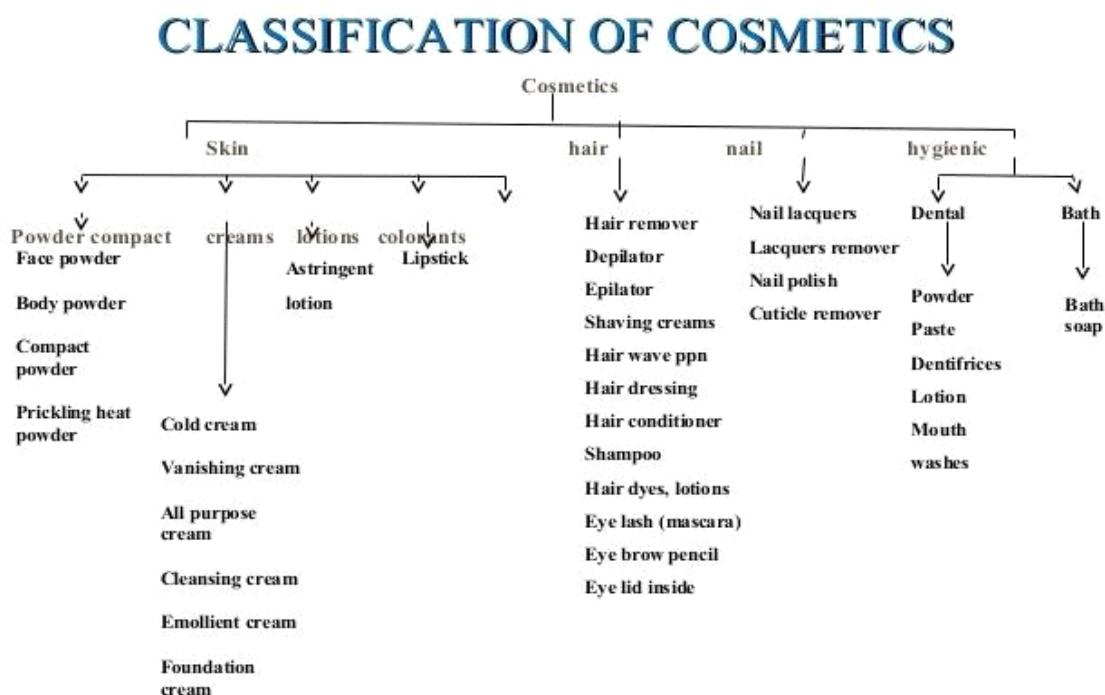
KEYWORDS: Creams, Topical drug delivery, Skin, Types of creams, Advantages and disadvantages.

INTRODUCTION

The word 'Cosmetic' is deduced from a Greek word – 'kosmesticos' that means to beautify. From that time any accoutrements used to beautification or promoting appearance is known as ornamental. The word "cosmetics" actually stems from its use in Ancient Rome. They were generally produced by womanish slaves known as "cosmetae" which is where the word "cosmetics" stemmed from 1. lately, cosmetics have been a necessity for men and women.

The need for cosmetics is frequently associated with the supposition relating to physical attractiveness. In general, cosmetics are constituents used to beautify the face area similar as cheeks, lips, indeed the eyes². Cosmetics are readily available moment in the form of creams, camo, scents, eye murk, nail polishes, hair sprays etc. Other cosmetics like face greasepaint give gleam to the skin after applying the base cream. Also we've powders, which are applied by numerous women of all periods. They're made from wax and cocoa adulation in the asked quantum. Cosmetics like creams, gels, and colognes are used on a diurnal base by both women and men. Creams act as a cleaner for the face in numerous circumstances. More lately anti-ageing creams have been manufactured which can retain youngish looking skin for numerous times. The stylish sanctification agents are sanctifying cream, cleaner and water. Cosmetic creams serve as a skin food for hard, dry and chapped skin. It substantially lubricates, softens and removes unwanted dirt from the skin. Some popular fat creams that are used include Vaseline and Lanolin. Dry creams are used in the manufacture of cleaner and gelatin which is used as a base for the skin. Hair care has come one of the fastest developing requests in the beauty assiduity. Numerous youthful men turn to canvases and gels to maintain and term their hair. Products like hair gels, canvases, and poultices have been introduced in the request to help cover hair fall and dandruff. Some professions, like the show business assiduity, concentrate on the significance of the external appearance numerous beauty products manufacturers have employed the requirements of people to cover themselves and their skin from the shafts of the sun. The significance of Cosmetics Today Cosmetics help to enhance our appearance and make us feel more confident. With further cosmetics on the request moment than ever ahead, it becomes egregious to us that they play a great part in our everyday life¹.

CLASSIFICATION OF COSMETICS



According to the function, cosmetics are classified into the following groups

- Decorative function (Example - Lipstick, Nail polish, etc.).
- Corrective function (Example - Dry cream and heavy face powder).
- Protective function (Example-Dry cream and heavy face powder).
- Curative function (Example - antiperspirant, hair preparation, etc.^[3])

Topical Drug Delivery

Topical drug delivery can be defined as application of drug via skin to directly treat or cure the skin disorders. These topical drug delivery systems are generally used for local skin infection like fungal infection or where other route of administration are no suitable. It can penetrate deeper into skin and hence give better absorption. Topical application has no advantages over the conventional dosage forms. In general, they are deemed more effective less toxic than conventional formulations due to the bilayered composition and structure. In the formulation of topical dosage forms, attempts has being made to utilize drug carriers that ensure adequate localization or penetration of the drug within or through the skin in order to enhance the local and minimize the systemic effects, or to ensure adequate Percutaneous absorption. Topical preparation prevents the GI-irritation, prevent the metabolism of drug in the liver so as increase the bioavailability of the drug. Topical preparations give its action directly at the site of action.

Advantages

- Avoidance of first pass metabolism.
- Convenient and easy to apply.
- Avoid of risk.
- Inconveniences of intravenous therapy and of the varied conditions of absorption like Ph changes presence of enzymes gastric emptying time etc.
- Achievement of efficacy with lower total daily dosage of drug by continuous drug input.
- Avoid fluctuation of drug levels inter- and intra patient variations.

Disadvantages

- Skin irritation of contact dermatitis may occur due to the drug and / excipients
- Poor permeability of some drugs through the skin
- Possibility of allergic reactions
- Can be used only for drugs which require very small plasma concentration for action
- Enzyme in epidermis may denature the drugs
- Drugs of larger particle size not easy to absorb through the skin.^[4]

Physiology of Skin

The skin is one of the largest and most important organs in the body and comprises approximately 16% of the human body weight. As it covers the entire body. The skin is continuous with the membranes lining the body orifices and in certain areas contains accessory structures such as glands, hair and nails.^[5]

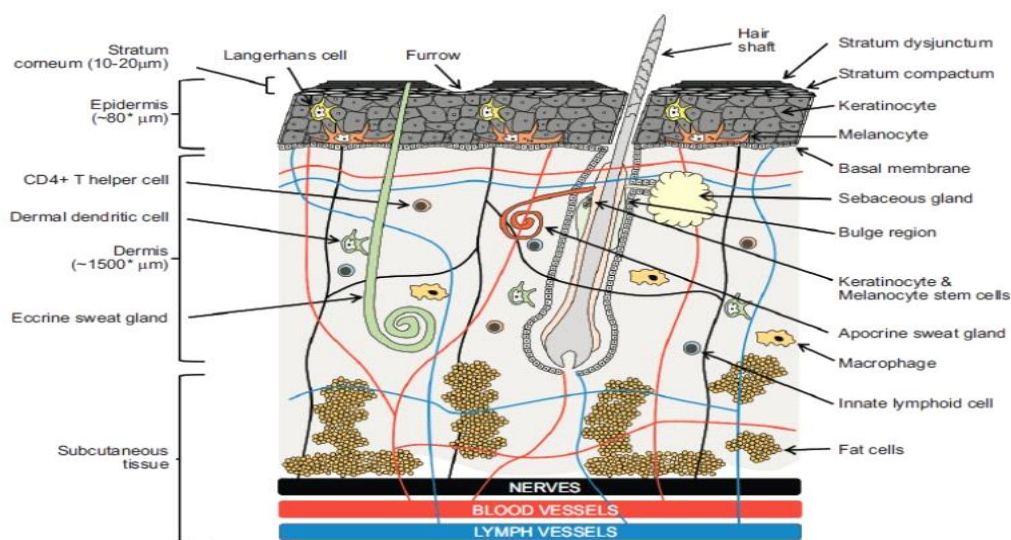


Figure 1.1: Cross-Section of Skin.^[6]

Epidermis: The epidermis is the most superficial layer of the skin and is composed of stratified keratinized squamous epithelium, which varies in thickness in different parts of the body. It is thickest on the palms of the hands and soles of the feet. There are no blood vessels or nerve endings in the epidermis, but its deeper layers are bathed in interstitial fluid from the dermis, which provides oxygen and nutrients, and drains away as lymph.

Dermis: The dermis is tough and elastic. It is formed from connective tissue and the matrix contains collagen fibers interlaced with elastic fibres. Rupture of elastic fibres occurs when the skin is overstretched, resulting in permanent stretch marks, that may be found in pregnancy and obesity. Collagen fibres bind water and give the skin its tensile strength, but as this ability declines with age, wrinkles develop. Fibroblasts, macrophages and mast cells are the main cells found in the dermis. Underlying its deepest layer there is areolar tissue and varying amounts of adipose (fat) tissue.

Subcutaneous gland: These consist of secretory epithelial cells derived from the same tissue as the hair follicles. They secrete an oily substance, sebum, into the hair follicles and are present in the skin of all parts of the body except the palms of the hands and the soles of the feet. They are most numerous in the skin of the scalp, face, axillae and groins. In regions of transition from one type of superficial epithelium to another, such as lips, eyelids, nipple, labia minora and glans penis, there are sebaceous glands that are independent of hair follicles, secreting sebum directly onto the surface.^[1]

Mechanism

Upon application of the topical drug on the skin, it will diffuse to the outer layer of the skin, known as stratum corneum. There are three routes possible for the drugs to cross the skin. The first route is through the appendages. It is known as the "first cut" where the drug molecules will be partitioned into the sweat gland to bypass the stratum corneum barrier. If the drug molecules is not transported via the "first cut", it is usually remains in the stratum corneum's bilayered lipids, where the drug molecules transport through either the transcellular route or paracellular route into the deeper area of the skin like subcutaneous layer. For the paracellular route, it means that the solutes transport via the junction between the cell. When the topical drug molecules transport via the paracellular route, it needs to travel across the stratum corneum, which is a highly fat region, but between the cells. On the other hand, the topical drug molecules may travel through the transcellular route. This route allows molecules to be transported via the cell. Transcellular route transports the drug

molecule into the bilayered lipid cells found in stratum corneum. Inside of the bilayered lipids in the stratum corneum is a water-soluble environment, and the drug molecules will diffuse through these bilayered lipids into deeper area of the skin. During the transportation of the topical drug molecules, it can bind to the keratin that exists as one of the skin components in the stratum corneum.^[7]

FUNCTIONS OF SKIN

Skin performs the following functions

- a) Protection:** An anatomical barrier from pathogens and damage between the internal and external environment in bodily defense, Langerhans cells in the skin are part of the adaptive immune system.
- b) Sensation:** Contains a variety of nerve endings that react to heat and cold, touch, pressure, vibration, and tissue injury, see stomata sensory system and haptics.
- c) Heat regulation:** The skin contains a blood supply far greater than its requirements which allows precise control of energy loss by radiation, convection and conduction. Dilated blood vessels increase perfusion and heat loss, while constricted vessels greatly reduce cutaneous blood flow and conserve heat.
- d) Control of evaporation:** The skin provides a relatively dry and semi-impermeable barrier to fluid loss. Loss of this function contributes to the massive fluid loss in burns.
- e) Aesthetics and communication:** Others see our skin and can assess our mood, physical state and attractiveness.
- f) Storage and synthesis:** Acts as a storage center for lipids and water, as well as a means of synthesis of vitamin D by action of UV on certain parts of the skin.
- g) Water resistance:** The skin acts as a water-resistant barrier so essential nutrients aren't washed out of the body.^[1]

Cream

Creams are the topical preparations which can be applied on the skin. Creams are defined as “viscous liquid or semi-solid emulsions of either the oil-in-water or water-in-oil type” dosage forms which consistency varies by oil and water. Creams are used for cosmetic purposes such as cleansing, beautifying, improving appearances, protective or for therapeutic function. These topical formulations are used for the localized effect for the delivery of the drug into the underlying layer of the skin or the mucous membrane. These products are designed to be used topically for the better site-specific delivery of the drug into the skin for skin disorders.

Creams are considered as a pharmaceutical product as they are prepared based on techniques developed in the pharmaceutical industry; unmedicated and medicated creams are highly used for the treatment of various skin conditions or dermatoses. Creams can be ayurvedic, herbal or allopathic which are used by people according to their needs for their skin conditions. They contain one or more drugs substances dissolved or dispersed in a suitable base. Creams may be classified as o/w or w/o type of emulsion on the basis of phases. The term 'cream' has been traditionally applied to semisolid formulated as either water-in-oil (e.g.: cold cream) or oil-in-water (e.g.: vanishing cream).

TYPES OF SKIN CREAMS

They are divided into two types:

Oil-in-Water (O/W) creams which are composed of small droplets of oil dispersed in a continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the aqueous phase is termed an oil-in-water (O/W) emulsion.

Water-in-Oil (W/O) creams which are composed of small droplets of water dispersed in a continuous oily phase. When water is the dispersed phase and an oil the dispersion medium, the emulsion is of the water-in-oil (W/O) type.

Types of creams according to function, characteristics, properties and types of emulsion

1. Make-up cream (o/w emulsion):
 - a) Vanishing creams.
 - b) Foundation creams.
2. Cleansing cream, Cleansing milk, Cleansing lotion (w/o emulsion)
3. Winter cream (w/o emulsion):
 - a) Cold cream or moisturizing creams.
4. All-purpose cream and general creams.
5. Night cream and massage creams.
6. Skin protective cream.
7. Hand and body creams.

1. Make-up cream: These are mainly o/w type of emulsion. It is cream-based product which leaves a smooth hydrated finish (either stain matte or luminous) on the skin. It nourishes skin and is basically sweat-resistant and creates a dewy sheen.

□ **Vanishing creams:** They are called vanishing creams because they seem to disappear when rubbed onto the skin. These formulations are based on stearic acid. After application, the cream leaves a dry but tacky residual film which also has a drying effect on the skin. Because of this reason, these are used particularly in hot climates which cause perspiration on the skin.

□ **Foundation creams:** These creams serve as a foundation base for make-up. It acts as an adherent base for application of make-up powders. They provide emollient action and a protective action against environment to the skin which is neither too greasy nor too dry. It is multicoloured make up applied on the face to create an even, uniform color similar to the complexion, to cover flaws and to change the skin tones.

2. Cleansing creams: These creams are used for body cleaning purposes and it is used for personal hygiene and beautification which is important for cosmetics. Cleansing creams or lotions can be used for the removal of make-up, surface grim, oil mainly from the face and neck.

3. Winter creams: These are w/o type of formulation and in this formulation oil content will be more than water content. These creams are mainly used for chapped and dry skin. Cold cream: It is known as moisturizer or moisturizing cream. Cold cream must have an emollient action. It should produce a cooling sensation in use and the oil film on the skin should be nonocclusive.

4. All-purpose creams and general creams: These creams are used more nowadays than before. These creams are somewhat oily but non-greasy type and can spread on the skin easily. This can also be used as a night cream, nourishing creams, protective creams for prevention or alleviation of sunburns or for the treatment of roughened skin areas.

5. Night cream or massage creams: These creams are mainly used for the nourishing the skin or as a treatment to dry skin. Creams which are generally applied on skin and left for few or several hours over night are mainly known as night creams. Creams which acts as an emollient by rubbing the cream on the skin with massage is known as massage cream.

6. Skin protective creams: These creams are smooth, thick bodied creams formulated to provide an invisible, uniform protective film barrier to the skin. It helps to maintain the barrier between the skin and contaminants that may irritate the skin (contact dermatitis and

occupational dermatitis). Strengthens the natural properties of the skin and maintains the balance of normal to combination skin.

7. Hand and body creams: Hands are one of the first places to show signs of aging. We tend to wash our hand several times a day, stripping off moisture. Applying cream softens and protects the skin and it keeps the skin looks younger. Since the skin on our palms and fingers needs oil to stay supple and to prevent it from chapping and cracking, it is sensible to use hand creams that puts plenty of oil back in. It is used on the hands more than other parts of the body.^[1]

CONCLUSION

Creams are semisolid formulations widely acceptable by the society. The skin is the most accessible part of the body and as such is also highly vulnerable to injuries, it is assured that pharmaceutical creams will still be an interesting and charming appearing 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 is also increased day by day.

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