

A Review Article On:Pharmaceutical Creams and their use in wound healing

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Abatract

Creams have been used as topical medications since time immemorial due to their ease of operation to the skin and also their junking. Pharmaceutical creams have a variety of operations ranging from ornamental purposes similar as sanctification, beautifying, altering appearance, moisturizin gets. to skin protection against bacterial, fungal infections as well as mending cuts, becks, injuries on the skin. The mortal skin is fluently vulnerable to injury but it has the capability to heal on its own. still, the natural mending process can take time and there's also threat of infection especially in the early stages of injury. In similar cases, creams can be applied to the point of injury to speed up the mending process as well as cover the crack from infection. In this review of literature, we've concentrated on the use of pharmaceutical creams for crack mending with detailed discussion relating to the crack mending process, suitable styles of medication of creams; their bracket grounded on their function, characteristics and conflation type and the colorful types of creams, constituents used in the expression of creams and their colorful evaluation parameters.

Keywords: *cream, wound healing, wound classification.*

Introduction:

Creams are the topical medications which can be applied on the skin. Creams are defined as “thick liquid or semisolid mixes of either the oil painting- in- water or water- in- oil painting type” lozenge forms which thickness varies by oil painting and water[1]. Creams are used for ornamental purposes similar as sanctification, beautifying, perfecting appearances, defensive or for remedial function. These topical phrasings are used for the localized effect for the delivery of the medicine into the underpinning subcaste of the skin or the mucous membrane. These products are designed to be used topically for the better point specific delivery of the medicine into the skin for skin diseases.[2] Creams are considered as a pharmaceutical product as they are prepared grounded on ways developed in the pharmaceutical assiduity; unmedicated and treated creams are largely used for the treatment of colourful skin conditions or dermatoses. Creams can be ayurvedic, herbal or allopathic which are used by people according to their requirements for their skin conditions. They contain one or further medicines substances dissolved or dispersed in a suitable base. Creams may be classified as o/ w or w/ o type of conflation on the base of phases. The term ‘cream’ has been traditionally applied to circumfluous formulated as either water- in- oil painting (e.g cold cream) or oil painting- in- water (e.g evaporating cream) [3].

Classification of creams:

All the skin creams can be classified on different basis:

1. According to function, e.g. foundation, massage, cleansing, etc.
2. According to characteristics properties, e.g. cold creams, vanishing creams, etc.
3. According to the nature or type of emulsion.

Types of creams according to function, characteristic properties and type 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. Skin protective cream.
6. Hand and body creams.
7. Night cream and massage creams.

Make- up cream:

These are substantially o/ w type of conflation. It is cream- grounded product which leaves a smooth doused finish (either stain matte or luminous) on the skin. It nourishes skin and is principally sweat- resistant and creates a dewy-eyed luster.

evaporating creams:

They're called evaporating creams because they feel to vanish when rubbed onto the skin. These phrasings are grounded on stearic acid. After operation, 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 beget perspiration on the skin.

Foundation creams :

These cream serve as a foundation base for make- up. It acts as an glutinous base for operation of make- up maquillages. They give emollient action and a defensive action against terrain to the skin which is neither too slithery nor too dry. It's multi-coloured make up applied on the face to produce an indeed, invariant colour analogous to the complexion, to cover excrescencies and to change the skin tones.

Cleansing creams:

These creams are used for body drawing purposes and it's used for particular hygiene and beautification which is important for cosmetics. Clansing creams or poultices can be used for the junking of make-up, face grim, oil painting substantially from the face and neck.

Winter creams:

These are w/ o type of expression and in this expression oil painting content will be further than water content. These creams are substantially used for chapped and dry skin.

Cold cream:

It's known as moisturizer or moisturizing cream. Cold cream must have an emollient action. It should produce a cooling sensation in use and the oil painting film on the skin should be non-occlusive.

All purpose creams and general creams:

These creams are used more currently than ahead. These creams are

kindly unctuous but non-greasy type and can spread on the skin fluently. This can also be used as a night creams, nourishing creams, defensive creams for forestallment or relief of sunburns or for the treatment of planed skin areas.

Night cream or massage creams:

These creams are substantially used for the nourishing the skin or as a treatment to dry skin. Creams which are generally applied on skin and left for many or several hours over night are substantially known as night creams.

Creams which acts as an emollient by rubbing the cream on the skin with massage is known as massage cream.

Skin defensive creams:

These creams are smooth, thick bodied creams formulated to give an unnoticeable, invariant defensive film hedge to the skin. It helps to maintain the hedge between the skin and pollutants that may irritate

the skin (contact dermatitis and occupational dermatitis). Strengthens the natural parcels of the skin and maintains the balance of normal to combination skin.

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 youngish. Since the skin on our triumphs and fritters needs oil painting to stay supple and to help it from chapping and cracking, it's sensible to use hand creams that puts plenitude of oil painting reverse in. It's use don the hands further than other corridor of the body.

Advantages and Disadvantages of creams as a drug delivery system:

Advantages of topical drug delivery system:

i. It is the easiest way to deliver a drug. ii. It avoids first pass metabolism. iii. Topical formulation is very useful for delivery of rectal, vaginal drug delivery. iv. It is non-invasive. v. It gives a high level of patient satisfaction.

vi. Easily medicaments can be terminated when required. vii.

Avoidance of gastro-intestinal incompatibility.

viii. It is safe and effective delivery of drug molecules with lower doses as compared to conventional system. Disadvantages of topical drug delivery system: i. Skin irritation or dermatitis may occur due to the drug or excipients.

ii. Most drugs have a high molecular weight and are poorly lipid soluble, so are not absorbed via skin or mucous membranes. iii. Very slow absorption.

iv. It can be used only for those drugs which need very small plasma concentration for action.

Wound and Wound healing process:

Crack AND Crack mending PROCESS Injuries may be defined as a loss or breaking of cellular and anatomic or functional durability of the deep skin towel or the living tissues. Injuries may be produced by physical, chemical, thermal, viral, microbial, violence or the immunological trauma to the face of the skin.⁴ Injuries not only affect the case physically and emotionally but can also significantly bring them and the scars may remain for the continuance of the case. Injuries are generally nominated as the physical injury that causes opening and breaking of the skin. Injuries can be classified substantially on the base of mode of infliction and causative agent as [9,10].

1. open wound

A. burn wound

B. bite wound_

C. Avulsion

D. Abrasion

E. crush wound

F. sharp cut

G. laceration

2. close wound-contusion, close fracture, etc

Crack mending is a process of cell compression, movement, re-adhesion after injury or trauma of the skin. Crack mending involves platelet aggregation, blood clotting, conformation of fibrin, seditious response to damage, revision in the ground substances, angiogenesis and re-epithilization [11,12]. Healing process cannot be

complete until the disintegrated face are roundly knit by collagen and eventually terminated by scars conformation. Crack mending can have a serious clinical problem and are likely to increase when they're associated with complaint similar as diabetes, hypertension and rotundity. [13,14] The process of crack mending may be hampered by the presence of free revolutionaries which will damage the girding skin tissues. And the process of crack mending is told by several factors similar as infections, nutrition, medicines and hormones, type and the spots of the crack and certain complaint conditions [15,16]. In India, since centuries people are using natural products attained from factory and beast for treatment of injuries which was tutored in a popular form of Indian drug know as Ayurveda [17]. Natural products have been used since centuries in different corridor of world; natural products are getting as important as indispensable drug because of their comparatively lower side goods. Due to these reasons, natural/ traditional drug Are delved scientifically

for the betterment of mortal health. these are used directly as in crude or raw form of medicine for the treatment of habitual conditions [18,19,20].

General constituent used in skin creams:

The raw accoutrements which are used in a manufacturing of skin creams include:

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 solvent to dissolve other constituents of creams. Water, which is free of any poisons, adulterants, microbes, etc. is used in medication of creams. Water can also form mixes, it depends upon how important volume of water is used in the expression and occasionally appertained to as oil painting-in-water mixes and occasionally water- in- oil painting mixes depending upon the amounts of oil painting phase and water phase used.

oil, fats and waxes: oil, fats and waxes are one of the essential portions of the cream. Waxes act as an emulsifier, fats act as a thickener and oil painting act as a incensing agent, preservative, etc. according to its function.

Mineral oil: is clear, odorless, and heavily refined oil painting and it's extensively used in cosmetics. Mineral oil painting infrequently causes antipathetic responses and it can not come solid and clog pores of the skin. It's light weight and affordable, it helps to reduce water loss from the body and keeps body moisturized. Mineral oil painting substantially used in cosmetics is liquid paraffin, liquid petroleum, paraffin oil painting, paraffin unliquidum, petrolatum liquid, petroleum oil painting etc.

Vegetable oil: form a hedge on the face of the skin and decelerate down the loss of water, helping to maintain plumpness of skin. Vegetable canvases may also be used to increase the consistence of the lipid or oil painting portion of cream or particular care. Almond oil painting, origin oil painting, avocado oil painting, sunflower oil painting etc.

Waxes: which are used in medication of cream includes beeswax, carnauba wax, ceresin, spermaceti, etc. Waxes are used in cosmetics because it helps to keep an conflation from separation of oil painting and liquid factors. These waxes also increase the consistence of the lipid portion and sticks on the face 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.

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. These constituents act as a lubricant on the skin face, which gives the skin soft and smooth appearance. Lanolin helps to form conflation and blends well with other substances used in ornamental and particular care products.

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: These are important multi-functional constituents set up in utmost skin care phrasings. Humectants are hygroscopic organic composites. These are the accoutrements that can absorb or retain humidity. These has numerous benefits similar as moisturization, exfoliation etc. exemplifications of humectant are glycerin,

Hydroxyethyl urea, betaine, sodium PCA, Sodium- L- Lactate, etc. Humectants are also used in soap they're intended to help moisturize the hair fighting the drying effect of the surfactants and it help in low temperature and snap/ thaw stability, where they act as anti-freeze and maintain clarity of the soap at low temperature.

Scents: It's used in wide variety of products to conduct a affable odour, mask the essential smell of some constituents. It's used in every type of cosmetics.

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

Preservatives: The use of preservatives in cosmetics is essential to help revision caused by microorganism and impurity during expression, payload, storehouse and consumer use. Antioxidants can also be used to cover revision caused by exposure to oxygen. Synthetic preservatives when used in low attention effectively save the products. They've a broad diapason of exertion against bacteria and fungi. Also, they're affordable also natural preservatives. Natural preservatives cover a broad pH range and also consumers generally prefer natural preservatives over synthetic preservatives.

Evaluation Parameter of Creams:

- 1. Determination of pH:** The pH of the cream can be measured on a standard digital pH cadence at room temperature by taking acceptable quantum of the expression adulterated with a suitable detergent in a suitable teacup.
- 2. Physical appearance:** The physical appearance of the cream can be observed by its colour, roughness and graded.
- 3. Spreadability:** Acceptable quantum of sample is taken between two glass slides and a weight of 100gm is applied on the slides for 5 twinkles. Spreadability can be expressed as, $S = m * l / t$ Where, m = weight applied to upper slide. l = length moved on the glass slide. t = time taken.
- 4. Saponification value:** 2gm of substance refluxed with 25 ml of 0.5 N alcoholic KOH for 30 min, to this 1 ml of phenolphthalein added and titrated incontinently, with N HCl, note the reading as ' a '. Repeat the operation forgetting the substance being examined. Note the reading as ' b '.

Saponification value = $(b - a) * 28.05 / w$

Where, w = weight of substance in gram.

- 5. Acid value:** 10gm 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 hotted , until sample was dissolved fully, to this 1 ml of phenolphthalein added and titrated with 0.1 N NaOH, until noiselessly pink colour appears after shaking for 30 seconds.

Acid value = $n * 5.61 / w$ Where, n =

the no. of ml of 0.1 N KOH result. w

= the weight of substance in gram.

- 6. density:** density of formulated creams can be determined by using Brookfield Viscometer.
- 7. Homogeneity:** The expression was tested for the unity by visual appearance and by touch.
- 8. junking:** The ease of junking of the creams applied was examined by washing the applied part with valve water.
- 9. Color test:** The scarlet color 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 drop appears red and the ground colourless also it's o/ w type and the rear condition appears in w/o type of creams.

10. **After sense:** Emolliency, slipperiness and quantum of residue left after the operation of fixed quantum of cream was checked.
11. **Type of smear:** After operation of cream, the type of film or smear formed on the skin were checked.
12. **Irritancy study:** Mark an area of 1sq. cm on the left-hand rearward face. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema was checked, if any, for regular intervals upto 24hrs and reported.
13. **Accelerated stability study:** Accelerated stability study is conducted for expression according to ICH guidelines.

Ayurvedic drugs for crack mending:

1. **Aloe Vera (A. barbadensis):** It's one of the important sauces in Ayurveda. It's having wide range of uses in skin conditions similar as becks , psoriasis, cold blisters,etc. It can also be for fever, itching, inflammation [23, 24].
2. **Peppermint (Menthapiperita):** It's a popular condiment and it's used in multitudinous forms. Peppermint oil painting when applied on the skin provides a cooling sensation. It's used in aromatherapy, bath medication, mouth wetlands, toothpaste and topical medications. It's used to calm pruritus, relieve vexation and inflammation and crack mending [25, 26].
3. **Turmeric (Curcuma longa):** In India, turmeric is used as spices as well as a colouring agent. It's having colourful medicinal parcels asanti-cancer,anti-seditious,anti-bacterial, antiviral, crack mending,etc.,28
4. **Jatropacurcas:** It's known for colorful medicinal parcels. It's havinganti-microbial,anti-cancer,anti-HIV, antibacterial, crack mending,etc [29].
5. **Honey:** Honey has been used since ancient times as a traditional drugs. Honey is having antioxidant, antitumor,anti-inflammatory,anti-microbial and cardiovascular potentiating agent. It's also used as a crack dressing and crack mending agent. Honey has been used to treat adult and neonatal postoperative infections, becks , necrotizing fasciitis, infected and non- mending injuries and ulcers, boils, pilonidal sinus, venous ulcer and diabetic bottom ulcers[30, 31].
6. **Marigold (Calendula officinalis):** It's a short lived sweet herbaceous imperishable factory. It's a flower/ factory which that has been used for centuries for cosmetic purpose, ornamental and medicinal purpose. Calendula is one of the top sauces and can be taken orally, it's one of the most important anti-oxidant and it is one of the strongest antiviral sauces. It's having anti-seditious, calms muscle spasm, heals ulcers, injuries, and hemorrhoids, aids period, contains antimicrobial and antiviral factors, improves oral health [32,33].
7. **Ghee:** The adulation which is attained fromthe cow milk has been claimed to have numerous medicinal parcels like it's cooling in energy, invigorating, bestows luster and beauty, enhances memory and stamina, increases the intellect, and promoteslongevity. It's having antimicrobial, immunostimulant, antioxidant and hepatoprotective activity.The process of crack mending by cow ghee is faster thananti-biotics. Cow ghee contains several impregnated and unsaturated adipose acids which are able of taking part in metabolic processes involved in mending of any injuries [34, 35].

Indispensable drugs creams for crack mending:

1. **Soframycin:** The Soframycin skin creams is manufactured as 1 w/ w as per IP which has Framycetin sulphate as the main element. Soframycin skin cream are used in curing injuries, furunculosis, cuts, becks, ulcers, lice, impetigo, otitisexterna, scabies, sycosis barbae,etc [36].
2. **Neosprine:** It's made up of three antibiotics that are neomycin sulphate, polymyxin B sulphateand bacitracin zinc. The topical ointment can be used to treat certain skin infections in becks , minor cuts, and injuries. These antibiotics works by killing bacteria that causes these infections.
3. **gray Nitrate:** It's a tradition topical result used in treating injuries and becks on the skin as ananti-pestilent agent, antiseptic and acidulous. There's little literature about the adverse effect of tableware nitrate can potentially be used as a cauterizing or sclerosing agent [37].

4. gray Sulphadiazine: This drug is used along with other treatment to help help and treat crack infections in cases with serious becks. tableware sulphadiazine workshop by stopping the growth of bacteria that may infect an open crack. This helps to drop the threat of the bacteria spreading to girding skin, or to the blood where it can beget a serious blood infection (sepsis). gray sulphadiazine belongs to a class of medicines known as sulfa antibiotics. Gray sulphadiazine cream is used to help and treat crack infections in cases with alternate- and third-

degree becks. gray sulphadiazine mustn't be used on unseasonable babies or on babe during the first 2 months of life because of the threat of serious side goods [38].

5. Cetrimide: It's an antiseptic which is a admixture of different quaternary ammonium mariners including cetrimonium platitude. It was first discovered and developed by ICI and introduced under the brand name Cetavlon. It's used as a 1- 3 result for drawing roadside accident injuries.

6. Betadine: It's having an active component as Povidone Iodine USP 10 w/w (available iodine 1). Povidone iodine is bactericidal against gram-positive and gram-negative bacteria. It's a broad- diapason antiseptic for the topical treatment or for estallment of infection in minor cuts and scrapes, minor surgical procedures and small area of becks, treatment of mycotic and bacterial skin infections [39].

Conclusion:

The skin is the most accessible part of the body and as similar is also largely vulnerable to injuries. In case of cuts, becks and injuries, topical phrasings similar as creams are the most preferred for treatment. As compared to other conventional systems, topical phrasings have certain advantages including- ease of operation, lower chances of side goods, non-invasive process and advanced patient compliance. exploration and development for the expression of pharmaceutical creams for crack mending purpose has grown in recent decades owing to its egregious benefits. With the progress in the pharmaceutical field and assiduity, it's assured that pharmaceutical creams will still be an intriguing and charming area of exploration for times to come.

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