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Review Article

A REVIEW ON MULTIPURPOSE HERBAL CREAM**Vishnu Narayanan^{1*}, Ahalya. S. S¹, Akash Jayaprakash¹, Arya Babu¹,
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Thiruvananthapuram, Kerala, India²Principal, Sree Krishna College of Pharmacy and Research Centre, Parassala,
Thiruvananthapuram, Kerala, India³Assistant Professor, Sree Krishna College of Pharmacy and Research Centre,
Parassala, Thiruvananthapuram, Kerala, India**Abstract:**

Herbal cosmetics are products used to enhance an individual's appearance. The purpose of this study was to review herbal cream for the purpose of moisturizing, nourishing and treating various skin diseases. The herbal cream has best properties and having nutritional values using less chemical which protects the skin from the various skin problem. Since the cream was prepared by using simple ingredients and simple method so the cream is also economical.

Natural remedies are more acceptable in the belief that they are safer with fewer side effect than the synthetic ones. So, the values of herbs in the cosmetics have been extensively improved in personal care system and there is greater demand for the herbal cosmetics nowadays.

Keywords: -Cosmetics, Herbal Cream, Tulsi, Neem, Aloe Vera.

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INTRODUCTION

Creams are semi-solid preparations containing one or more medicinal agents dissolved or dispersed in either water-in-oil emulsion or an oil-in-water emulsion or in another type of water-washable base. Cream can be classified as oil in water and water in oil emulsion. It is applied on surface or superficial part of skin and its advantage is to remain for a longer duration of time on site of application. The main function of a skin cream is to provide protection from different environmental condition, weather and provide soothing effect to the skin. The general types of creams are cold, cleansing, vanishing, foundation, massage and body creams¹.

An herbal cosmetic has growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or no side effects with synthetic drugs. Herbal cosmetics are defined as the beauty products which possess desirable physiological activity such as healing, smoothing appearance, enhancing and conditioning properties because of herbal ingredient. Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. The basic idea of skin care cosmetics lies deep within the Rigveda, Yajurveda, Ayurveda, Unani and Homeopathic system of medicine. These are the products during which herbs are utilized in crude extract form. The herbs should have variety of properties like antioxidant, anti-inflammatory, antiseptic, emollient, anti-seborrhetic, antikeratolytic activity and antibacterial etc. An herbal cream which will give effective protection to skin and free from any toxicity or toxic residue or any irritation when regularly used and will even be cosmetically acceptable².

ADVANTAGES OF HERBAL CREAM

- They do not provoke allergic reaction and do not have negative side effects.
- They are easily incorporated with skin.
- When small quantity they are very effective as compared to synthetic cosmetic.
- Extract of plant decreases the bulk property of cosmetics and gives appropriate pharmacological effects.
- Easily available and found in large variety and quality.

- Easy to manufacture and cheap cost.

DISADVANTAGES OF HERBAL CREAM

- Herbal drugs have slower effects as compare to Allopathic dosage form. Also, it requires long term therapy.
- They are difficult to hide taste and odour.
- Most of the herbal drugs are not easily available.
- Manufacturing process is time consuming and complicated.
- No pharmacopoeia defines any specific procedure or ingredients to be used in any of herbal cosmetics³.

BENEFITS OF HERBAL CREAM

- Treats pimples and acne.
- Controls excess oil secretion.
- Makes the skin softer and smoother.
- Maintains pH balance of the skin.
- Suitable for all skin types.
- 100% cruelty-free.
- Easily available
- Economical
- It enhances the energy level of the body.
- Variety of phyto-constituents can be incorporated^{4,5}.

IDEAL PROPERTIES OF HERBAL CREAM

- It should liquefy at body temperature.
- It should not normally be diluted.
- Should give a cooling effect on the skin after external application.
- Less greasy than ointment and easily spread on the skin.
- The pH of the cold cream must be optimum from 4.6-6.0.
- It should penetrate the epidermis (via natural process).
- Its viscosity should be low enough to permit easy spreading.
- It should be non-toxic.
- The excipients should be compatible with each other. It should be sterile.
- It should be non-irritant.
- It should be non-inflammatory.

DRUG SELECTION CRITERIA FOR HERBAL CREAM

1. Gel should not have too much dry gel; it should not have skin irritancy.
2. Ability to cross skin layer and cure skin problems permanent.
3. It should have a pleasant smell.

It should suitable for all type skin such as dry skin.

5.It should suitable be available in affordable price.

6.It should be natural origin.

7.Ability to provide more moisture⁶.

TYPES OF BASES USED IN

HERBAL CREAMS

1. **Oleaginous bases:** - It consists of oil and fat. It is anhydrous non- washable and do not absorb water.
 - Petroleum (soft paraffin): - Semi solid hydrocarbon + lubricating oil
- I. Yellow soft paraffin: - obtained from petroleum also may contain anti-oxidant like vitamin E and BHT. Melting range: - 38 to 56°C
- II. White soft paraffin: - obtained from petroleum. Melting range: - 38 to 56°C
- III. Hard paraffin: - mixture of solid hydrocarbon obtained from petroleum. Solidifies: - 50 to 57 °C
- IV. Liquid paraffin: - It is a mixture of liquid, hydrocarbon obtained from petroleum.

2. Absorption bases: -

- Composition base + w/o surfactant
- Water content: - anhydrous
- Solubility in Water: - insoluble
- Spread ability: - difficult
- Wash ability: - non washable
- Stability: - oil poor, hydrocarbon better
- Drug incorporation: - solid oil and aqueous solution
- Drug Release: - Poor but greater than oleaginous
- Example: - wool fat (anhydrous lanolin) absorbed 50% of water its own weight.
- Hydrated wool fat (lanolin): - 70% W/W wool fat + 30 % W/W purified water.
- It is a w/o emulsion.

3. Water miscible bases: -

- They are miscible with an excess of water ointment made from water miscible bases are easily remove after use.
- There are three official anhydrous Water miscible ointment base.
- Example: - Emulsifying ointment B.P.: - anionic emulsifier, ceterimide Emulsifying ointment B.P.: - cationic emulsifier.

Cetomacrogel Emulsifying ointment B.P. - Non- ionic emulsifier.

- It is used for O/W creams.
- Compound benzoic acid ointment used as anti-fungal ointment.

4. Water soluble bases: -

- Water soluble bases contain only the water-soluble ingredients and not the fats or other greasy substance hence, they are known as grease less bases.
- Water soluble bases consists of water-soluble ingredients such as polyethylene glycol polymer (PEG) which are popularly known as carbowaxes and commercial known as macrogols.
- Example: - Macrogol 200, 300, 400: - viscous liquid
- Macrogol 1500: - greasy semi solid
- Macrogol 1540, 3000, 4000: - waxy solids⁷

ANATOMY OF SKIN

Skin is the largest organ in the body and covers the body's entire external surface. It is an impressive and vital organ. It is a fleshy surface with hair, nerves, glands and nail. It consists of hair follicles which anchor hair strands into the skin. It act as barrier between outside and inside environment. It is made up of three layers, the epidermis, dermis, and the hypodermis, all three of which vary significantly in their anatomy and function. The skin's structure is made up of an intricate network which serves as the body's initial barrier against pathogens, UV light, and chemicals, and mechanical injury. The skin has different thickness and textures. It also regulates temperature and the amount of water released into the environment. It allows sensation such as touch, heat, and cold. It also guards the bones, muscles and other vital organs of our body.

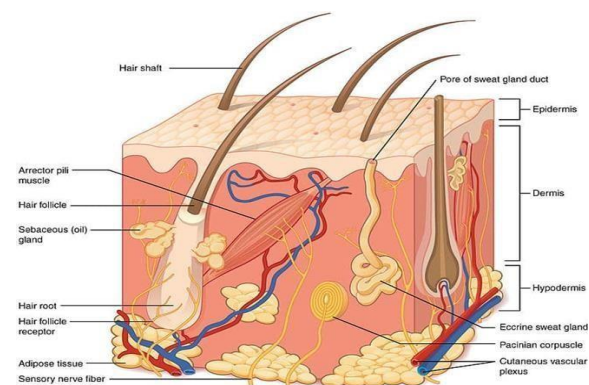


Figure 1: Anatomy of Skin

Skin Thickness

The thickness of each layer of the skin varies depending on body region and categorised based on the thickness of the epidermal and dermal layers. Hairless skin found in the palms of the hands and soles of the feet is thickest because the epidermis contains an extra layer, the stratum lucidum. The upper back is considered thickest based on the thickness of the dermis, but it is considered “thin skin” histologically because the epidermal thickness lacks the stratum lucidum layer and is thinner than hairless skin.

The Epidermis

The epidermis is the outermost layer of the skin, and protects the body from the environment. The thickness of the epidermis varies in different types of skin; it is only .05 mm thick on the eyelids, and is 1.5 mm thick on the palms and the soles of the feet. The epidermis contains the melanocytes (the cells in which melanoma develops), the Langerhans' cells (involved in the immune system in the skin), Merkel cells and sensory nerves. The epidermis layer itself is made up of five sub layers that work together to continually rebuild the surface of the skin:

Layers of Epidermis

The layers of the epidermis include the stratum basale (the deepest portion of the epidermis), stratum spinosum, stratum granulosum, stratum lucidum and stratum corneum (the most superficial portion of the epidermis).

Stratum Basale

It is also known as stratum germinativum, is the deepest layer, separated from the dermis by the basement membrane (basal lamina) and attached to the basement membrane by hemidesmosomes. The cells found in this layer are cuboidal to columnar mitotically active stem cells that are constantly producing keratinocytes. This layer also contains melanocytes.

Stratum Spinosum

It is also known as prickly cell layer. It has 8-10 cell layers and contains irregular, polyhedral cell with cytoplasmic processes, sometimes called “spines” that extend outward and contact neighbouring cells by desmosomes. Dendritic cells can be found in this layer.

Stratum granulosum

It consists of 3-5 cell layers, contains diamond shaped cells with keratohyalin granules and lamellar granules. Keratohyalin granules contain keratin precursors that eventually aggregate, crosslink, and

form bundles. The lamellar granules contain the glycolipids that get secreted to the surface of the cells and function as glue, keeping the cells stuck together.

Stratum lucidum

It consists of 2-3 cell layers, present in thicker skin found in the palms and soles, is a thin clear layer consisting of eleidin which is a transformation product of keratohyalin.

Stratum corneum

It consists of 20-30 cell layers, is the uppermost layer, made up of keratin and horny scales made up of dead keratinocytes, known as anucleate squamous cells. This is the layer which varies most in thickness, especially in callused skin. Within this layer, the dead keratinocytes secrete defensins which are part of our first immune defense.

Cells of Epidermis

- Keratinocytes
- Melanocytes
- Langerhans cells
- Merkel's cell

Dermis

The dermis is connected to the epidermis at the level of the basement membrane and consists of two layers, of connective tissue, the papillary and reticular layers which merge together without clear demarcation. The papillary layer is the upper layer, thinner, composed of loose connective tissue and contacts epidermis. The reticular layer is the deeper layer, thicker, less cellular, and consists of dense connective tissue/ bundles of collagen fibres. The dermis houses the sweat glands, hair, hair follicles, muscles, sensory neurons, and blood vessels.

Hypodermis

The hypodermis is deep to the dermis and is also called subcutaneous fascia. It is the deepest layer of skin and contains adipose lobules along with some skin appendages like the hair follicles, sensory neurons, and blood vessels⁸.

VARIOUS HERBS USED IN PREPARATION OF CREAM

Aloe Vera

Family: Asphodelaceae

Biological source: Dried latex of leaves of aloe vera
Biological name: Aloe barbadensis miller

Therapeutic uses: A number of beneficial effects of aloe vera including immunomodulatory, wound and burn healing, hypoglycemic, anticancer, gastro-

protective, antifungal, and anti-inflammatory property.

Medicinal uses

These polyphenols, along with some of the other compounds in aloe vera, help prevent the growth of certain bacteria that can cause disease in humans. Aloe Vera is known for its antibacterial, antifungal and antiviral properties. This is one reason why it helps to heal wounds and cure skin problems. Aloe Vera is often referred to as a cosmetic used to treat sunburn. Additionally, it may provide other health benefits, mainly due to its antioxidant properties. Preliminary research suggests that aloe vera may benefit your skin, teeth, mouth and digestive health⁹.

Benefits of aloe-vera

- Its anti-inflammatory properties can reduce pain, swelling, and soreness of wounds or injuries.
- It has a cooling effect on rashes or sunburns.
- It supports the production and release of collagen.
- Help in keeping your face health and gives you a natural shine.
- Aloe-vera is rich in moisturizing properties it helps in removing dead cells.
- Prevent or reduce wrinkles and dark spots of your face.
- Moisturizes dry skin.
- Soothes irritated skin.
- Remove sign of ageing.
- Fights acne and blemishes.
- Relieves eczema and psoriasis.
- Eliminates dead skin cells.
- Treat sunburn.
- Bring a natural glow to the skin.
- Hydrated the skin with essential.
- Prevents premature aging.
- Reduce stretch marks.



Figure 2: Aloe Vera

Neem

Family: -Meliaceae.

Biological source: - fresh or dried leaves and seed oil of *Azadirachta indica*. Biological name: -*Azadirachta indica*

Therapeutic uses: - immunomodulatory, anti-inflammatory, anti-hyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic.

Medicinal uses

Neem leaves are used for leprosy, eye disease, nosebleeds, intestinal worms, stomach upset, and loss of appetite, skin ulcers, heart and blood vessel diseases (cardiovascular disease), fever, diabetes, gum disease (gingivitis) and liver disease. The leaves are also used to control birth and cause miscarriage.

Benefits of neem leaf powder

- Acts as a shield against dandruff.
- It can be used for both face and hair.
- Treat dry scalp making it smooth and shiny.
- Increase radiance and produce ageing effect.
- Increase blood circulation.
- Keep the skin healthy and glowing.
- Neem has anti-bacterial properties which get rid of pimples.
- Neem lightens and blurs the scars left behind by acne.
- Neem is anti-inflammatory in nature with fatty acids and glycosides.
- Neem is rich in anti-oxidant and vitamin E that reduce wrinkles.
- Fatty acids and vitamin E in neem nourish the skin.
- Help soothe eczema.
- Treat acne.
- Prevent skin infection.
- Gives even skin tone.



Figure 3: Neem

Tulsi

Family: -Lamiaceae

Biological name: -Ocimumtenuiflorum

Biological source: -fresh and dried leaves of Ocimum species like Ocimum sanctum L. and Ocimum basilicum L. etc.

Medicinal uses

Holy basil contains vitamin C and antioxidants such as eugenol, which protects the heart from the harmful effects of free radicals. Eugenol also proves useful in reducing cholesterol levels in the blood. Tulsi acts a mild diuretic & detoxifying agent which helps in lowering the uric acid levels in the body. Acetic acid present in holy basil helps in the breakdown of the stones. Tulsi is a natural headache reliever which can also relieve migraine pain. Tulsi's anti-inflammatory properties help promote eye health by preventing viral, bacterial and fungal infections. It also soothes eye inflammation and reduces stress¹⁰.

Benefits of tulsi leaf

- Natural immunity booster.
- Reduce stress and blood pressure.
- Good for skin health.
- Useful in kidney stone.
- Supports healthy skin aging.
- Soothes skin condition like eczema.
- Great for healing skin problem.
- Good source of vitamin K.
- Super beneficial for skin.
- Helping anti-aging.
- Prevent acne.



Figure 4: TULSI

VARIOUS CHEMICALS USED IN PREPARATION OF CREAM

Borax

Borax is used with candles in many cosmetics such as creams, gels and lotions. It is known that hand sanitizers are used to help clean the oil from the hands. Borax's alkalinity makes it an excellent ingredient in hand cleaners and toners. In cosmetics, borax is sometimes used as an emulsifier, buffer, or preservative in moisturizing

products, creams, shampoos, gels, lotions, bath bombs, scrubs, and bath salts. Many children like to play together. Almost every cosmetic product contains borax, from face creams and lotions to shampoos, body lotions and even body lotions.

Due to its mild properties and antibacterial properties, many natural cosmetic products also prefer to use borax as a basic ingredient¹¹.



Figure 5: Borax

Beeswax

Antibacterial protection - Beeswax also acts as a protective layer when applied to the skin. Protects skin from environmental irritants and extreme weather conditions. Promotes hair growth - Beeswax not only moisturizes and soothes the hair, but also prevents moisture loss from the hair.

Both of these qualities help the skin retain moisture. Beeswax is also a good exfoliant for removing dead skin cells. Beeswax heals and softens the skin and is an antimicrobial. It can help you fight diseases such as acne, dry skin, eczema and stretch marks¹².



Figure 6: Beeswax

Liquid Paraffin

Liquid Paraffin is Laxative, Faecal Softener. It is used in the treatment of dry skin. It relieves dry skin conditions such as eczema, ichthyosis and pruritus of the elderly. Liquid Paraffin is an Emollient (Substances that soften or soothes the skin). It works by preventing water loss from the outer layer of skin. Liquid Paraffin is a product used to provide temporary relief of constipation.



Figure 7: Liquid Paraffin

ROSE WATER

Rose water is especially hydrating when combined with other moisturizing ingredients such as ceramides or glycerine. Moisturizer Rose water has been used as a beauty product. It can improve skin, reduce skin redness and supports the skin's natural pH balance. Antibacterial properties can help reduce acne. Anti-inflammatory properties can reduce skin redness and swelling. Rose water. Chemically formulated soaps and cleansers disrupt the pH balance of our skin, making it susceptible to bacteria that cause various skin conditions such as

rashes and acne. This property helps rose water restore the skin's normal pH level.



Figure 8: Rose water
GENERAL METHOD OF PREPARATION

- Take the liquid paraffin and bees wax in a borosilicate glass beaker and heat at 75°C and maintain that heating temperatures (oil phase).
- In other beaker, dissolve borax and distilled water by maintaining temperatures 75°C with water bath.
- Stir the solution with glass rod until all solid particles get dissolved (Aqueous phase). Then gently add heated aqueous phase in heated oily phase with continuous stirring.
- After mixing both phases, immediately add aloe vera extract, neem extract and tulsi extract into it with continuous mixing using glass rod until it forms a smooth cream. When cream is formed, then add rose oil as fragrance^{14,15}.

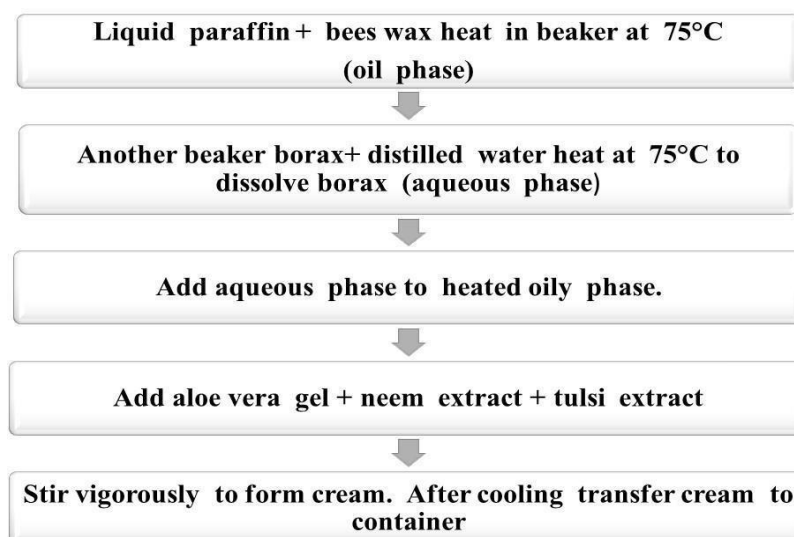


Figure 9: Steps in preparation of cream

EVALUATION OF MULTI PURPOSE HERBAL CREAM

Morphological Evaluation

- **Physical properties:** The cream was observed for the colour, odour and appearance¹⁶.

Physicochemical Evaluation

- **Washability:** The ease of removal of the cream applied was examined by washing the applied part with tap water and the ease with which the washing of the cream was observed¹⁷.
- **pH of the Cream:** The pH meter should be calibrated using standard buffer solution. About 0.5 g of the cream was taken and dissolved in 50.0 ml of distilled water then pH was measured using pH meter¹⁸.
- **Spreadability:** Cream was placed between two glass slides and compressed to uniform thickness by placing 100 g of weight for 5 min. A weight was added to the pan. The time required to separate two slides i.e., time in which upper glass slide moved over lower slide was taken as a measure of spreadability¹⁹.

$$S = m \cdot l / t$$

m = weight on upper slide

l = length moved on a glass slide

t = time taken

- **Irritancy test:** An area (1sq.cm) on the left-hand dorsal surface was used for this purpose. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hr²⁰.
- **Phase separation:** The prepared cream was transferred in a suitable wide mouth container. Set aside for storage the oil phase and aqueous phase separation were visualizing after 24hours^{23, 24}.
- **Viscosity:** Viscosity of cream was done by using Brooke field viscometer at the temp of 25⁰C using spindle no, 63.at rpm.
- **Homogeneity:** Homogeneity was tested via the visual appearance and test.
- **After feel:** Emolieny slipperiness and amount of residue left after the application of the fixed amount of cream was found to be good.

Test for microbial growth: Agar media was prepared then the formulated cream was inoculated

on the plate's agar media by steak plate method and a controlled is prepared by omitting the cream. The plates were placed in the incubator and are incubated in 37⁰C for 24 hours. After the incubation period, the plates were taken out and the microbial growth were checked and compared with the control²¹.

Dye test: The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide then covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red the ground colourless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e., the disperse globules appear colourless²².

Stability Study:

1. Temperature Variation:

Stability testing of prepared formulation was conducted by storing at different temperature conditions for specific period of time. The packed glass vials of formulation stored at different temp., conditions and were evaluated for physical parameters like color, odour, consistency, PH etc.

2. Light Exposure Testing:

The product is placed in its actual packaging at direct sunlight for 48 hours to check and discoloration of the product.

CONCLUSION:

The herbal cream has best properties and having nutritional values using less chemical which protects the skin from the various skin problem. Since the cream was prepared by using simple ingredients and simple method so the cream is also economical. The herbal cosmetic formulation is safe to use and it can be used as the provision of a barrier to protect skin. Due to antibacterial and anti-inflammatory properties of various herbs, it prevents skin related disorders also improves skin tone, protects from damaging UV rays. Natural remedies are more acceptable in the belief that they are safer with fewer side effect than the synthetic ones. So, the values of herbs in the cosmetics have been extensively improved in personal care system and there is greater demand for the herbal cosmetics nowadays.

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