



The Antileprotic Herbal Cream Formulation of *Abutilon Indicum*

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ABSTRACT :

Creams are semi-solid dose forms commonly administered topically to the skin. Along with some of the typical plants used in these kinds of formulations, the preparation and evaluation of herbal creams are the primary subjects of this study. In basically, the herbal cream is an emulsion of water and oil. *Abutilon indicum*, *Chaulmoogra* oil, *Turmeric*, *Ginger* and *Lemon* oil are the natural ingredients used to make the herbal cream. These substances were chosen based on their unique qualities. Essentially, the cream base - liquid paraffin, beeswax, borax is used to prepare the cream. The various evaluation parameters yet to be done for analysing the therapeutic effect of the antileprotic herbal cream. The demand for natural ingredients and natural extracts in cosmetics preparations was spurred by consumers' growing knowledge of the detrimental effects of chemical-based cosmetics on the skin as well as the increasing use of herbal products. The market for cosmetics has expanded due to the growing demand for natural products. The natural ingredients in botanicals provide the body with nutrients and other beneficial minerals without having any adverse side effects.

Keywords : Cosmetics, Herbal cream, *Abutilon indicum*, *Chaulmoogra* oil, Antileprotic activity.

INTRODUCTION :

The word "cosmetics," which meaning to decorate, was derived from the Greek word "cosmetics." Since then, a cosmetic has been defined as any substance used to enhance or improve look^[1-3]. Cosmetics protect the skin from both internal and external damaging elements while improving the skin's general look and beauty. Cosmetics are used to prevent skin conditions, enhance one's appearance, and support long-term health.^[4-5]

The natural or synthetic ingredients in skin care products that, among other things, hydrate, lower type I collagen, offer photo-protection, and maintain the skin's elasticity, health, texture, and integrity.^[6] The components of the skin care formulation give this cosmetic its long-lasting ability to alter the characteristics of the skin and dramatically lower the accumulation of free radicals in the skin. Cosmetic goods are the best choice if it comes to avoiding unwanted facial flaws, particularly hyperpigmentation, aging, wrinkles, and rough skin texture, among others.^[7-8] The demand from consumers for herbal beauty products is rising quickly. Plant ingredients used to make cosmetics should have a range of qualities, such as antioxidant, emollient, antibacterial, antiseptic, and anti-inflammatory properties.

Natural products are thought to have fewer adverse effects than those that contain synthetic components. The word "herbal" promotes safety in contrast to synthetic products, which are harmful to human health. According to market data, the herbal cosmetics business significantly contributes to the worldwide demand for herbal products, and the herbal industry is gradually growing.^[10-11] Every day, both men and women use cosmetics such as moisturizers, gels, and colognes. Creams can be used as a face cleanser in several conditions.^[12-13] For rough, dry, and chapped skin, cosmetic creams serve as skin food. In essence, it lubricates, softens, and removes unwanted dirt from the skin. Among the popular fat creams are Vaseline and Lanolin. Dry creams are used to make gelatin and soap, which serve as the foundation for the skin.^[14] Cosmetics improve our appearance and increase our sense of self-worth. Given the wide variety of cosmetics on the market today, it is clear that they are vital to everyday life.^[15]

CREAMS :

Creams are semisolid dosage forms used topically for medicinal, preventative, or cosmetic purposes on the skin, the surface of the eye, or rectally, vaginally, or through the nose.^[16] Face cream is applied topically to produce a cleansing and softening effect.

Skin creams have the dual functions of shielding the skin from external contaminants and promoting relaxation.^[14,17] Hand and body massage, vanishing, night, cleansing, cold, and foundation creams are among the several types of creams.^[18]

HERBAL CREAMS :

Creams made from herbs are emulsions made of both water and oil. They may include items like abutilon indicum, chaulmoogra oil, turmeric, ginger and lemon oil. ^[19] Herbal creams contain various extracts, tinctures, and essential oils. Herbal creams contain vitamins and minerals, which are natural nutrition devoid of potentially harmful synthetic ingredients. ^[1-21]

TYPES OF HERBAL CREAM :

They can be divided into two groups:

a) **Oil-in-Water (O/W) Creams:** O/W creams are defined as creams that contain tiny oil droplets dispersed over a continuous phase.

On the other hand, an oil-in-water (O/W) emulsion is one that has oil droplets scattered throughout the aqueous phase. ^[22]

b) **Water-in-oil (W/O) Creams:** W/O creams are defined as creams that have water and oil mixed together in liquid form. When water is the dispersed phase and oil is the dispersion medium, the emulsion is referred to as water-in-oil (W/O) type. ^[23]

PREPARATION OF HERBAL CREAM :

For the production of various herbal creams with varying application goals, a wide variety of plants and plant products are utilized. All of the approaches, meanwhile, adhere to a common chain process that can be described as follows.

The procedure begins with the gathering of raw plant materials, which are then cleaned and their quality evaluated after purchase. These are then dried or otherwise processed based on necessity. The following phase involves the extraction of the raw plant materials, when appropriate, using conventional techniques, and the collection of certain solvents or juices/gels using standard techniques. The following stage is the preparation of the oil phase, where liquid when paraffin and beeswax are continuously heated to 75 °C, the oil phase is produced that is utilized in creams. To make a transparent solution, borax and methyl paraben are combined with distilled water and heated to 75 °C. This is referred to as aqueous phase preparation. To create smooth creams, the water phase is gradually added to the heated oil phase and blended, followed by the addition of the herb extract, juices, or jelly. The product has been prepared for packaging once the proper scent has been added. ^[24-26]

COMMON EXCIPIENTS USED & THEIR ROLES :

When preparing creams or herbal creams, a wide variety of excipients are necessary. Liquid paraffin and beeswax are two very common and widely used excipients that are employed as lubricants, thickeners, and emulsifiers, respectively.

Borax is a typical alkaline agent that forms soap when it combines with an emulsifying agent.

One of the most widely utilized preservatives in these kinds of goods is methyl paraben.

Typically, volatile oils or suitable flower extracts are combined to create a variety of appealing scents ^[25-28]

IDEAL CHARACTERISTICS OF HERBAL CREAM :

1. Good penetration ability, which enables the cream's drug to enter the skin and produce the desired result.
2. In order to avoid unwanted skin reactions like itching, rashes, or redness, it should not be toxic.
3. When applied, it intended for distributing uniformly across the skin.
4. It should melt or liquefy at body temperature when applied to the skin.
5. Avoid causing irritation or inflammation of the skin. ^[24]

ADVANTAGES :

1. Application efficiency.
2. Simple to use.
3. The avoidance of hazards.
4. No particular risk or technician is required for the application.
5. Prevent changes in drug levels when there is variation within and between patients.
6. Excellent patient compliance. ^[25]

The advantage of using cream formulations is their efficiency; they are easy to wash and clean and can be applied directly to the skin without leaving any residue. [26]

LIMITATIONS :

1. Mostly, it can be applied to drugs that need minimal plasma concentrations to function.
2. It makes allergic reactions more probable.
3. Drugs with larger particles have a harder time penetrating through skin pores.
4. The potential for any drug to cause skin irritation or contact dermatitis. [27]

THE HERBS USED IN THE FORMULATION OF ANTILEPROTIC CREAM :

The herbs that are used in formulating the herbal antileprotic cream which includes ;

S.No	Common Names	Parts used	Chemical Constituents	Uses
1.	Indian Mallow	Leaves & Roots of <i>Abutilon indicum</i>	Saponins, flavonoids, alkaloids, hexoses, n-alkane mixtures (C22-34), alkanol, Beta - sitosterols, vanillic acid, Paracoumaric acid, caffeic acid, fumaric acid, Abutilon-A,(R)-N-(1'-methoxycarbonyl-2'phenylethyl)-4-hydroxybenzamide, Parahydroxybenzoic, galatonic, Para—Beta-D-glycosyloxybenzoic and amino acids.	Hepatoprotective, hypoglycaemic, immunomodulatory, analgesic, antimicrobial, antimalarial, antileprotic, antifertility and wound healing .
2.	Chaulmoogra oil	Oil extracted from the seeds of <i>Hydnocarpus wightianus</i>	Chaulmoogric, Hynocarpic, goric and palmitic acids.	Antirheumatic, antimicrobial, antileprotic, antitubercular, antipsoriatic, gout-treating, bactericidal.
3.	Turmeric	Dried rhizomes of <i>Curcuma longa</i>	Curcumin and curcuminoids	Anti-oxidant, Anti-aging, Moisturizing, Antimicrobial, Treats acne, antiseptic.
4.	Ginger	Dried rhizomes of <i>Zingiber officinalis</i>	Gingerols, shagoals, zingiberene, Polysaccharides and organic acids.	Anti-oxidant, anti-inflammatory, anti-microbial, neuroprotective, anti-cancer, woung healing.
5.	Lemon oil	Oil extracted from the peel of <i>Citrus limon</i>	Terpenes (limonene), sesquiterpenes, aldehydes (citral and citronellal) and esters (geranyl acetate).	Anti-inflammatory, antimicrobial, wound healing, analgesic, antiseptic, antiemetic.

Table. No: 1. Herbs used in the Formulation of Antileprotic Cream

HERBS DESCRIPTION ON ANTILEPROTIC ACTIVITY :

- **Abutilon indicum :**

Abutilon indicum (Linn.) is a perennial soft shrub which belongs to the family called 'Malvaceae'. It is used for its numerous therapeutic effects which includes analgesic, antipyretic, anti-inflammatory, hypoglycaemic, anti-microbial, anti-oxidant etc., also helps in treating diseases such as asthma, chronic bowel complaints, nervous system disease, urinary and seminal diseases, rheumatoid arthritis.^[30-31]

It is used in traditional medicine like Siddha & Ayurveda, where the infusion of roots and dried leaf where used to treat leprosy patients to cure and in healing their skin lesions.^[32]



Fig.no : 1. Abutilon indicum

- **Chaulmoogra Oil :**

Chaulmoogra oil is an essential oil which is extracted from the seeds of *Hydnocarpus wightiana* that belongs to family 'Flacourtiaceae'. It composed of chemical constituent which includes fatty acids (*Hydnocarpic acid*, *chaulmoogric acid* & *Gorlic acid*), terpenes and other compounds.^[33-34]

It is used for its pharmacological effects as antimicrobial, anti-tubercular etc., which was long used in traditional Ayurvedic medicine for the treatment of leprosy and other skin related problems including psoriasis and eczema.^[35-36]

It was used externally in various form as powder, oil, emulsion and ointment.^[37]



Fig.no: 2. Chaulmoogra Oil

- **Turmeric :**

Turmeric is the dried rhizomes of '*Curcuma longa*' which belongs to the family called 'Zingiberaceae', which is composed of chemical constituent such as curcumin, phytosterols, zingiberene fatty acids, desmethoxycurcumin, bisdesmethoxycurcumin and polysaccharides.^[38-39]

It has a wide spectrum of pharmacological properties which it acts as anti-inflammatory, antioxidant, immunomodulatory, antibacterial, anticarcinogenic, neuroprotective and antiseptic activity.^[39]

It is one of the common household remedy and used in traditional medicine for treating skin related diseases such as leprosy, psoriasis, hyperpigmentation and helps in improving the discolouration of skin, healing the wounds and acute injuries such as burns.^[40-42]



Fig.no: 3. Turmeric

- **Ginger :**

Ginger is the dried rhizome of 'Zingiber officinale' which belonging to the family called 'Zingiberaceae' composed of terpenes (Zingiberene, curcumene), phenolic compounds (Gingerol, shagaol, quercitine, gingerenone), lipids and volatile oils.

It is used for its numerous medicinal uses which it acts as antioxidant, anti-inflammatory, antimicrobial, neuroprotective, cardiovascular protective, antiemetic and respiratory protective.

Ginger used as a medicinal ingredient in the treatment of leprosy in ancient times of medieval Europe that helps in treating skin imperfections and as analgesic ointment.



Fig.no: 4. Ginger

- **Lemon Oil :**

Lemon oil is extracted from the peels of 'Citrus limon' that belongs to the family 'Rutaceae' containing chemical composition of terpenes (Limonene, Sabinene, Myrcene), aldehydes (Citral, Citronellal), esters (Geranyl acetate).

It has a potential to act as natural antimicrobial and anti-oxidant agent which it is also used for its pleasant aroma as flavouring agent & preservative in cosmetic preparations.

It helps in promoting wound healing property and exfoliates the dead skin cells. Its antibacterial activity helps to treat and prevent inflammation caused in skin.



Fig.no: 5. Lemon oil

EVALUATION OF HERBAL CREAM :

- **Physical examination :**

The following physical properties are used to evaluate formulations. [28]

a. Colour: The cream's colour is determined by eye inspection.

b. Odour: The cream has a characteristic odour.

c. Consistency: The cream's consistency is assessed by rubbing it on the hand. The cream's consistency is smooth. The cream should not leave any oily residue on the skin after usage.

d. State: The cream's condition is visually assessed. The cream must be semi-solid.

- **pH :**

A digital pH meter can be used to determine the pH of herbal cream. After creating the cream solution with 100 milliliters of distilled water, leave it for two hours. To determine the solution's pH, take three measurements and average the results. [32]

- **Irritancy Test :**

Mark one square centimeter on the left dorsal surface. Apply cream to the targeted area and time the process. For up to 24 hours, observe and report irritation, erythema, and edema at regular intervals. [33]

- **Spreadability :**

Divide cream between two glass slides and apply a weight of 100 grams for 5 minutes. The spreadability of two slides is determined by measuring the movement of the upper glass slide over the lower slide or the time required to separate them.

The formula is $S = m \times l/t$.

Where m is the weight on the upper slide.

l = the distance traveled on the glass slide. t = the amount of time spent. [34]

- **Viscosity :**

To measure the viscosity of herbal cream compositions, use spindle no. 7 and a Brookfield viscometer at 100 rpm. [29]

- **Homogeneity :**

The formulation's homogeneity can be assessed by appearance and touch. [20]

- **After Feel :**

After applying a specific amount of cream, checks are made for emollience, slipperiness, and residual amount. [35]

- **Removal :**

To find out how rapidly the herbal creams can be removed, the treated region should be cleaned with tap water. [36]

- **Acid Value :**

This test determines the amount of free fatty acids in the product, indicating the level of hydrolytic rancidity and overall quantity. It involves titrating the cream with a known concentration of a base (KOH) to neutralize the free fatty acids and calculating the amount of base needed. A lower acid value

implies more stability and quality, where higher levels indicate fat and oil deterioration, which can compromise the cream's safety, efficacy and shelf life.

- **Saponification Value :**

This test determines the quantity of alkali necessary to saponify the fats and oils in the product, providing information about the average molecular weight of the fatty acids present. It involves titrating the mixture after heating it with alcoholic potassium hydroxide.

CONCLUSION :

Natural medicines are preferred over synthetic ones due to their perceived safety and fewer adverse effects. Bioactive ingredients in topical formulations improve skin health by influencing its biological functions and providing essential nutrients. Natural herbs can be used in cream recipes for numerous purposes. Herbal treatments are a sustainable technique to improve skin look. Natural nutrients, such as vitamins and minerals, help maintain healthy, vibrant, and glossy skin. Herbal creams promote blood circulation, muscular rejuvenation, skin smoothness, and dirt removal from pores. Herbal formulations have become a significant economic role in the cosmetics business due to increased global demand over the past few decades. Further research into the safety, efficacy, and user compliance of these formulations may increase demand for them.

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