



# FORMULATION AND EVALUATION OF HERBAL MOISTURIZING CREAM

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## ABSTRACT-

Moisturizing cream are semi solids preparation used for reduces the chances of skin problems and fights wrinkles. The main aim of the reaserch work is to prepare the moisturizing creams using different herbs and the prepared moisturizing cream are evaluated for the efficacy. The herbs used in the preparations are dried bael leaves powder, amla powder, neem powder, turmeric. The formulated moisturizing creams are evaluated for the various irritancy, wash ability, pH, viscosity, phase separation, spread ability, compatibility test. The results shown that all formulation gave satisfied results.

## INTRODUCTION :

The word 'Cosmetic' derived from a Greek word – 'kosmesticos' that means to adorn. From that time any materials used to beautification or promoting appearance is known as cosmetic. The word "cosmetics" actually stems from its use in Ancient Rome. They were typically produced by female slaves known as "cosmetae" which is where the word "cosmetics" stemmed from. Cosmetics are used to enhance appearance. Makeup has been around for many centuries. The first known people who used cosmetics to enhance their beauty were the Egyptians. Makeup those days was just simple eye coloring or some material for the body. <sup>(1)</sup> Now-a-days makeup plays an important role for both men and women. The importance of cosmetics has increased as many people want to stay young and attractive. Cosmetics are readily available today in the form of creams, lipstick, perfumes, eyeshadows, nail polishes, hair sprays etc. Other cosmetics like face powder give glow to the skin after applying the base cream. Then we have lipsticks, which are applied by many women of all ages. They are made from wax and cocoa butter in the desired amount. <sup>(1)</sup>

Cosmetics like creams, gels, and colognes are used on a daily basis by both women and men. Creams act as a cleanser for the face in many circumstances. More recently anti-ageing creams have been manufactured which can retain younger looking skin for many years. The best cleansing agents are cleansing cream, soap and water. Cosmetic creams serve as a skin food for hard, dry and chapped skin. It mainly 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 soap and gelatin which is used as a base for the skin. <sup>(1)</sup>

The appearance and function of the skin are maintained by an important balance between the water content of the stratum corneum and skin surface lipids. The skin represents the most superficial layer of the body, and so it is constantly exposed to different environmental stimuli. Exposure to external factors as well as endogenous factors may disrupt this balance. <sup>(2)</sup>

In addition, frequent use of soaps, detergents and topical irritants such as alcohol and hot water can remove the skin surface lipids. Disruption of skin barrier led to the various type of skin problems most common condition is a loss of water content which leads to dryness of skin such as roughness, scaling, cracks, redness and an uncomfortable feeling of tightness, sometimes with itching and stinging. Treatment with moisturizer aims at maintaining skin integrity and well-being by providing a healthy appearance of the individual. Numbers of moisturizers are available under the label of natural, safe,

organic, herbal while the basic properties of humectancy, occlusivity and emolliency are consistent across all moisturizers. Most of the available moisturizers use synthetic adhesives, emulsifiers, perfuming agents, pigments, surfactants and thickeners to form the base. There is extensive need to replace toxic synthetic agent from the base using natural agents. <sup>(3)</sup>

## TOPICAL DRUG DELIVERY :

Over the last decades the treatment of illness have been accomplished by administrating drugs to human body via various routes namely oral, sublingual ,rectal, parental ,topical ,inhalation etc.Topical delivery can be defined as the application of a drug containing formulation to the skin to directly treat cutaneous disorder or the cutaneous manifestations of a general disease (eg. psoriasis) with the intent of containing the pharmacological or the effect of drug to the surface of the skin or within the skin semisolid formulations in all their diversity dominate the system for topical delivery, but foams, spray , medicated powders, solutions and even medicated adhesive systems are in use. <sup>(4)</sup>

### Advantages of topical drug delivery system :

- 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.
- Skin irritation or dermatitis may occur due to the drug or excipients.
- Most drugs have a high molecular weight and are poorly lipid soluble, so are not absorbed via skin or mucous membranes.
- Very slow absorption.
- It can be used only for those drugs which need very small plasma concentration for action. Can be used only for drugs which require very small plasma concentration for action Possibility of allergic reactions.
- Drugs of larger particle size not easy to absorb through the skin. <sup>(5)</sup>

## PHYSIOLOGY OF HUMAN SKIN :

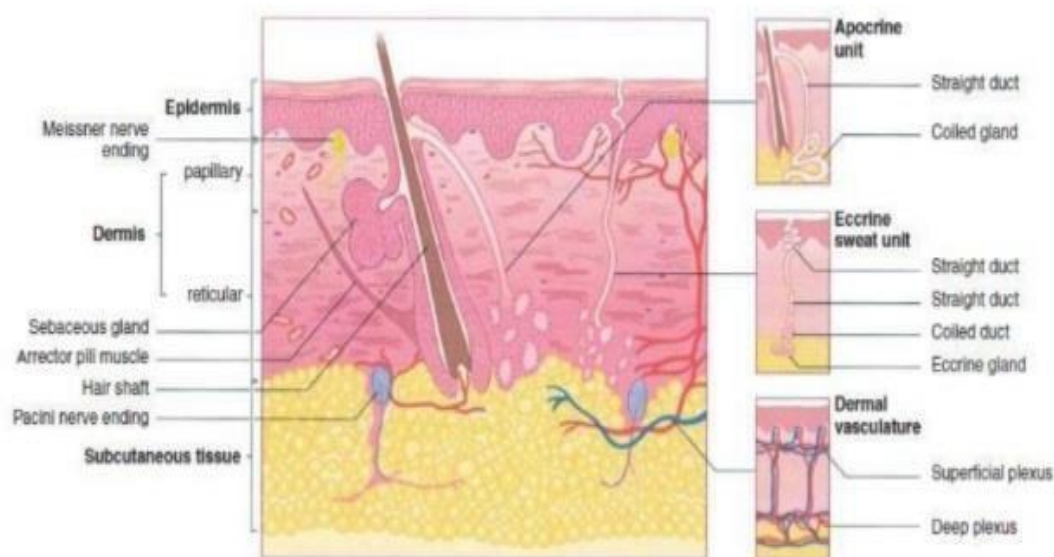


Fig.no.1 Cross-Section of Skin <sup>(6)</sup>

### Epidermis :

The epidermis is the most superficial layer of the skin and is composed of stratified keratinised 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 fibres interlaced with elastic fibres. Rupture of elastic fibres occurs when the skin is overstretched, resulting in permanent striae, or 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. <sup>(7)</sup>

## **DISEASES OF SKIN :**

### **a) Vitiligo :**

Vitiligo is a condition in which areas of skin lose their normal pigment and so become white. It is common, and affects about 1% of the world's population. The pigment that gives your skin its normal colour is melanin, which is made by cells known as melanocytes.

### **b) Scabies :**

Scabies is a common and very itchy skin condition caused by human scabies mites. It can affect people of any age but is most common in the young and the elderly. The mites that cause scabies are tiny parasites, smaller than a pinhead. The rash of scabies is a mixture of scratch marks and red scaly areas; later it can become infected and develop small pus spots.

### **c) Rosacea :**

Rosacea is a common rash, found on the central part of the face, usually of a middle aged person. A tendency to flush easily is followed by persistent redness on the cheeks, chin, forehead and nose. The cause of rosacea is not fully understood, but many think that the defect lies in the blood vessels in the skin of the face, which dilate too easily.

### **d) Psoriasis :**

Psoriasis is a common skin problem affecting about 2% of the population. It occurs equally in men and women, at any age, and tends to come and go unpredictably. It is not infectious, and does not scar the skin. The skin is a complex organ made up of several different layers.

### **e) Melanoma :**

Cutaneous malignant melanoma is a cancer of the pigment cells of the skin. If it is treated early, the outlook is usually good. It is not contagious. The word 'melanoma' comes from the Greek word 'melas', meaning black. Melanin is the dark pigment that gives the skin its natural colour.

### **f) Eczema (Atopic Eczema) :**

Atopic eczema is an inflammatory condition of the skin. Atopic is the term used to describe conditions such as eczema, asthma, seasonal rhinitis and hay fever, which often have a genetic basis. Eczema is the term used to describe changes in the upper layer of the skin that include redness, blistering, oozing, crusting, scaling, thickening and sometimes pigmentation.

### CREAMS :

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. <sup>(8)</sup>

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. <sup>(9)</sup>

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). <sup>(10)</sup>

### 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. <sup>(11-13)</sup>

### CLASSIFICATION OF CREAMS :

**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. Night cream and massage creams.
6. Skin protective cream.

## 7. Hand and body creams. (14-17)

**GENERAL INGREDIENTS USED IN SKIN CREAMS :**

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

- **Water:** This is the most important and widely used raw material in any cream formulation. These are the cheapest and easily available. In skin creams, water is used as solvent to dissolve other ingredients of creams. Water, which is free of any toxins, pollutants, microbes, etc. is used in preparation of creams. Water can also form emulsions, it depends upon how much quantity of water is used in the formulation and sometimes referred to as oil-in-water emulsions and sometimes water-in-oil emulsions depending upon the quantities of oil phase and water phase used. (18)
- **Oil, fats and waxes:** Oil, fats and waxes and derivatives there form comprise an essential portion of creams. Waxes act as an emulsifier, fats act as a thickener and oil act as a perfuming agent, preservative, etc. according to its function .Oil may be two types' mineral and glyceride.
- **Mineral oil:** Mineral oil consists of hydrocarbons derived from petroleum oil .Mineral oil is clear, odorless, and heavily refined oil and it is widely used in cosmetics. Mineral oil rarely causes allergic

reactions and it cannot become solid and clog pores of the skin. It is light weight and inexpensive, it helps to reduce water loss from the body and keeps body moisturized. A number of mineral oils are used in cream formulation.

- **Examples:**
- Light liquid paraffin
- Heavy liquid paraffin
- Liquid petroleum
- **Glyceride oil:** Glyceride oil is mostly vegetable oils. Examples of glyceride oils are almond oil, arachis oil, castor oil, coconut oil, olive oil etc.
- **Vegetable oil:**  
Form a barrier on the surface of the skin and slow down the loss of water, helping to maintain plumpness of skin. Vegetable oils may also be used to increase the thickness of the lipid or oil portion of cream or personal care products. (19)  
E.g. Almond oil, germ oil, avocado oil, sunflower oil etc.
- **Waxes:**  
Which are used in preparation of cream includes beeswax, carnauba wax, ceresin, spermaceti, etc. Waxes are used in cosmetics because it helps to keep an emulsion from separation of oil and liquid components. These waxes also increase the thickness of the lipid portion and sticks on the surface of the skin.
- **Fats:**  
Different types of fats are used in the preparation of creams. These materials can be obtained from animals, plants or mineral origin. Glyceride oils and fats may be of animals or vegetable origin. They consist of combinations of higher fatty acids and glycerin. When saponified they form soap, or

fatty acid and glycerin, depending upon process used. The most common of these fatty acid are lauric, margaric, plamitic, stearic, saturated group. Oleic acid is liquid and most popular unsaturated fatty acid. More specially the oil most commonly used in other cosmetics are olive oil, almond oil, sesame oil, peanut oil, coca butter fat, mutton tallow, lard and beef stearine. (20)

- **Lanolin:**

It is derived from wool fat of a sheep. 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 ingredients act as a lubricant on the skin surface, which gives the skin soft and smooth appearance. Lanolin helps to form emulsion and blends well with other substances used in cosmetic and personal care products.

- **Colours:**

Before the development of the modern technology, colours primarily came from substances found in nature such as turmeric, saffron, indigo, etc. After the 19th century, colours were made in the laboratory and were found to be much more stable with greater colouring intensity. They also could be produced without using plants harvested in the wild. (21)

- **Emollients:**Emollients, also commonly referred to as moisturizers, are products that help to soften skin or to treat skin that has become dry. Most emollients are forms of oil or grease, such as mineral oil, squalene, and lanolin. They work by increasing the ability of the skin to hold water, providing the skin with a layer of oil to prevent water loss, and lubricating the skin. (22)

- **Humectants:**

These are important multi-functional ingredients found in most skin care formulations. Humectants are hygroscopic organic compounds. These are the materials that can absorb or retain moisture. These has many benefits such as moisturization, exfoliation, etc. Examples of humectant are glycerin, Hydroxyethyl urea, betaine, sodium PCA, Sodium-L-Lactate, etc. (23)

- **Perfumes:**

Perfume is a substance that imparts a scent or order, including a sweet and pleasant smell. Examples

of natural perfumes used in creams are-

□ White Blossoms: □ Rosy Dreams

- Orange Blossom (24)

- **Vitamins:**

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

- **Preservatives:**

The use of preservatives in cosmetics is essential to prevent alteration caused by microorganism and contamination during formulation, shipment, storage and consumer use. Antioxidants can also be used to protect alteration caused by exposure to oxygen. Synthetic preservatives when used in low concentration effectively preserve the products. (25)

- **Moisturizer :**

Moisturizer or emollient is a cosmetic preparation used for protecting, moisturizing, and lubricating the skin. These functions are normally performed by sebum produced by healthy skin. The word "emollient" is derived from the Latin verb *mollire*, to soften. In the human body, water constantly evaporates from the deeper layers of the skin through an effect known as transepidermal water loss (TEWL). By regulating its water content, human skin naturally maintains a dry, easily shed surface as a barrier against pathogens, dirt, or damage, while protecting itself from drying out and becoming brittle and rigid. The ability to retain moisture depends on the lipid bilayer between the corneocytes. Moisturizers modify the rate of water loss, with active ingredients of moisturizers falling into one of two categories: occlusives and humectants.

- **Occlusives** form a coating on the surface of the skin, keeping moisture from escaping. The more occlusive the formulation, the greater the effect. Ointments are more occlusive than aqueous creams, which are more occlusive than lotion. Water loss through the skin is normally about 4–8 g/(m<sup>2</sup> h). A layer of petrolatum applied to normal skin can reduce that loss by 50–75% for several hours. Oils naturally produced by the human body moisturize through this same mechanism.

- **Humectants**

Absorb water. They can absorb this water from the air and moisturize the skin when the humidity is greater than 70%, but more commonly they draw water from the dermis into the epidermis, making skin dryer. A study published in Skin Research and Technology in 2001 found no link between humectants and moisturizing effect. When used in practical applications, they are almost always combined with occlusives. Moisturizers often contain water, which acts as a temporary hydration agent and as a way for the absorption of some components and evaporation of the moisturizer.

- **Types of moisturizers:**

There are many different types of moisturizers. Petrolatum is one of the most effective moisturizers, although it can be unpopular due to its oily consistency. Other popular moisturizers are cetyl alcohol, ceteryl alcohol, cocoa butter, isopropyl myristate, isopropyl palmitate, lanolin, liquid paraffin, polyethylene glycols, shea butter, silicone oils, stearic acid, stearyl alcohol and castor oil, as well as other oils. Moisturizers may also be available as lotions, creams, ointments, bath oils, or soap substitutes. Mineral oils and waxes are insensitive to oxidation or rancidity. For this reason, they have Moisturizer cosmetics may additionally contain antioxidants, ceramides, emulsifiers, fragrances, penetration enhancers, preservatives, and solvents. Some products are marketed as having anti-wrinkle and skin enhancement effects. Many plant and animal extracts have been claimed to impart skin benefits, with little scientific evidence.

- **Uses:**

- Moisturizers are used for the treatment of certain skin diseases, such as psoriasis, ichthyosis vulgaris, xerosis, and pruritus in atopic dermatitis. More often, they are bases or vehicles for topical medication, such as in Whitfield's ointment. They are often combined with humectants, such as salicylic acid and urea.
- Moisturizers are also widely used in sunscreens, antiperspirants, skin cleansers, shaving creams, aftershaves, and hair tonics.
- Moisturizers are used in disposable napkins to prevent dry skin and napkin dermatitis.

- **Advantages of mosturizers :**

- Mosturizing reduces the chances of skin problems.
- Mosturizing can reduce the appearance of other blemishes.
- Mosturizing helps your skin stay young. □Mosturizing fights wrinkles.

- **Disadvantages of moisturizers**

- Over –moisturization
- Allergens
- Fire risk

## Literature Survey :

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– A Review on Its Medicinal Properties.

## Aim and objective-

**Aim-** Formulation and Evaluation of herbal moiturizing cream.

## Objectives-



- 1.To reduce acne and skin irritation ,reduce skin diseases ,dry,skin,wrinkles,etc
- 2.To inhance glow to the face

### Need of work:-

- 1.Natural cosmetics are safest to use and effective as well as in comparison with other beauty product flooded in the market.
- 2.Sutaible for all skin types. An individual with the skin of any types can use them and never have to worry about degrading skin condition.
- 3.No side effects.
- 4.A product made from botanicals, or plants, that are use to treat diseases or to maintain health are called herbal product.
5. The natural content in botanicals does not cause any side effects on the human body; instead, enrich the body with nutrients and other useful minerals.
6. Most of the cosmetic products are initially tested on animals to ensure that they are safe and effective to use for human. However, natural cosmetics need not be tested on animals. These natural formulations are tested by Ayurvedic Experts in laboratories using state of the art equipment with no animals involved.
- 7.Natural cosmatics are not that expensive. In fact , they are easily available at low cost.

### Categories :-

- 2.it is beneficial for skin.

### Plan of work:

#### 1.Collection

#### 2.Processing of raw materials

#### 3.Standardization of raw materials:-

- a. Organoleptic evaluation
- b. Microscopical evaluation
- c. Physicochemical evaluation : -
  - Colour ○
  - Odour ○
  - ○
  - Spreadabili
  - ty ○
  - Irritancy

- Wash ability
- Compatibility

## Material and Methods:-

### Plant profile and chemicals

#### Aegle Marmelos (Beal) :

Aegle marmelos (L) Correa commonly known as Bael or Bilva belonging to family Rutaceae has been widely used in indigenous systems of Indian medicine due to its various medicinal properties. Aegle marmelos tree is held sacred by Hindus and offered in prayers to deities Lord Shiva and Parvati and thus the tree is also known by the name

Shiva duma (the tree of Shiva). The Bael tree has its origin from Eastern Ghats and Central India. It is also Indigenous to Indian subcontinent and mainly found in tropical and subtropical regions. <sup>(26)</sup>

Bael has been known to be one of the most important medicinal plants of India. More than 100 phytochemical compounds have been isolated from various parts of plant, namely phenols, flavonoids, alkaloids, cardiac glycosides, saponins, terpenoids, steroids, and tannins. These compounds are well known to possess biological and pharmaceutical activity against various chronic diseases such as cancer and cardio vascular and gastrointestinal disorder. Antioxidant, Antiulcer, Antidiabetic, Anticancer, Anti-inflammatory, Antimicrobial effects have been reported on various animal models by crude extract of this plant.

Every part of Aegle marmelos plant such as fruit, stem, bark and leaves possesses medicinal property and is used for treating various eye and skin infections. Leaf is considered to be one of the highest accumulatory parts of plant containing bioactive compounds which are synthesized as secondary metabolites. However there is little information about the uses of Bael in external care for properties like moisturization. The present study was, therefore, aimed at evaluating the phytochemical potential and moisturizing property of Aegle marmelos aqueous and chloroform leaf extract. <sup>(27)</sup>



*Fig.no.3 Aegle Marmelos leaf*

#### Synonyms :

Belou marmelos

#### Table No. 1.scientific classification

Kingdom:	Plantae
Order:	Sapindales

Family:	Rutaceae
Subfamily:	Aurantioideae
Genus:	<i>Aegle</i> Corrêa
Species:	<i>A. marmelos</i>

### Biological Source :

Bael consists of the unripe or half-ripe fruits or their slices or irregular pieces of *Aegle marmelos* Corr., belonging to family Rutaceae.

### Geographical Source :

Sub-Himalayan tract and throughout India, especially Central and Southern India, Burma, occurring as wild and also cultivated.

### Chemical Constituents :

The chief constituent of the drug is marmelosin A, B and C (0.5%), which is a furocoumarin. Other coumarins are marmesin, psoralin and umbelliferone. The drug also contains carbohydrates (11–17%), protein, volatile oil and tannins. The pulp also contains good amount of vitamins C and A. Two alkaloids O-methylhalfordinol and iso-pentylhalfordinol have been isolated from fruits. Other alkaloids reported in the drug are angelenine, marmeline and dictamine.

**Cumarin :** Ant-inflammatory, Antiviral, anti-oxidant

**Marmeline :** Anti-oxidant, anti-inflammatory

**Imperatorin :** Anti-inflammatory **Aegeline :**

Anti-oxidant.

### Uses :

Drug is very popular in Ayurveda and is used in diarrhoea and dysentery. Action is attributed to mucilage. Leaves contain alkaloids and are considered useful in diabetes. The oil obtained from seeds possesses antibacterial, antiprotozoal and antifungal properties. The root of *bael* is one of the constituents of well-known ayurvedic preparation Dasmula.

In large doses it may lead to abortion, therefore, it can be used as abortifacient agent and hence it should not be used in pregnant women.

### Substitutes :

**Mangosteen fruits:** *Garcinia mangostana* Linn (Guttiferae) is a substitute for this fruit, and it can be identified by the darker rind and the wedge shaped radiate stigmas.

**Wood apple :** *Limonia acidissima* Coor (Rutaceae) is a five lobed fruit with rough exterior part.

**Pomegranate rind:** *Punica granatum* Linn (Punicaceae) contain triangular impressions on the seeds and has astrin-gent taste.

### Marketed Products

It is one of the ingredients of the preparations known as Lukol for leucorrhoea;

- Chyawanprash (Himalaya Drug Company)
- Isabbeal and Bilwadi churna (Baidyanath Company)
- Madhushantak (Jamuna Pharma) and Sage bilwa churn (Sage Herbals).

### Medicinal properties of bael leaves :

- Leaves of bael are used in asthma and a laxative for mucous membrane having a free discharge.
- To reduce or dispel fever decoction of plant leaves is used and also enhances the secretion of mucous from bronchial tube.

- For inflammation of body parts and severe conjunctival inflammation, hot poultice of leaves is used. Juice of bael leaves is used to treat dropsy and jaundice.
- Leaf extract of bael is helpful in resting blood glucose, and to keep the body weight to normal values.
- Leaves of bael works same as insulin works i.e. it promotes the ability to utilize the externally available glucose in body by stimulating glucose uptake.
- Extract of bael is used to cure some other problems like it helps in lowering blood urea, reduce lipid peroxidation and cholesterol and increased level of super dioxide dismutase, catalase, glutathione peroxidase level in serum and als in liver in experimental diabetic animals .
- Fresh and young leaves of bael are supposed to cause sterility and abortion.
- Leaves of bael are used to prepare medicated oil which helps to give relief from recurrent cold and respiratory infections.
- Leaves are used in backpain, abdominal disorders, beriberi, acute brnchitis, child birth, hair tonic, abscess, cut and wounds, nervous disorders, cardio tonic etc .



## Fig No.4. Medicinal properties of bael leaves

**Materials :**

- Collection of Aegle marmelos:

The fresh leaves of Aegle marmelos were collected from the local

market. □ Collection of plant materials :

Neem leaves , Termeric , Tulsi Leaves ,Amla were collected from the any local botanical garden. (27)

Tabel No.2: Role of ingredients

Sr. No	Ingredients	Roles
1	Beal	Anti-bacterial, antifungal, anti-inflammatory
2	Amla	Anti-ageing, hydrates and protect the skin, anti-oxidant
3	Termeric	Anti-inflammatory, antimicrobial, anti ageing. anti-oxidant,
4	Neem	Promote wound healing, relieves skin dryness, itching and redness.
5	Bees Wax	Emulsifying agent, stabilizer and gives thickness to the cream.
6	Liquid paraffin	
7	Borax	Alkaline agent which reacts with emulsifying agent to form soap
8	Methylparaben	Preservative
9	Rose oil	Fragrance

**AMLA :**

**Synonyms :** -Emblica , Indian goose Berry , Amalki

**Biological Sources:** - This consists of dried, as well as fresh fruits of the plant Emblica Officonails Gaerth Phyllanthus emblica Linn.Belonging to family Euphorbiaceae.

**Geographical Source :-** It Is a small or medium tree found in all deciduous forests of India. It is also found in Sri Lanka & Myanmar. The leaves are feathery with small oblong pinnately arranged leaflets. The tree is characteristics greenish grey with smooth bark.

**Cultivation & Collection : -**

Amla Is grown by seed germination . Amla Propogated By Budding or cutting. The Drip Irrigation is most suitable for amla . Plant bears male & female flowers separately. The extent of fertilization is 25 – 30 % . Cultivated plants bears large fruits. The tree flowers in hot season & the fruits ripen during the winter.

**Macroscopic Characters :-**

**Colour :-** The green colour changes to lightly yellow or brick red at maturity.

**Odour :-** Odourless.

**Taste :-** The taste of amla is score and astringent.

**Size :-** 1.5 & 2.5 cm in diameter.

**Shape :-** The Fruits are depressed , globular.

**Chemical Constituents :-**

Amla fruits is a rich natural sources of vitamin C ( Ascorbic Acid ) and contains 600-750mg per 100 g of the fresh pulp. Fruits are also contain 0.5 % fat , phyllemblin and 5 % tannin. The fresh fruits contain 75% moisture . The frits are dehydrated and stored.

**Activity :** Amla, being a rich source of vitamin C, is considered important to slow ageing process. It improves skin health. Ageing is a cumulative result of damage to various cells and tissues, mainly by oxygen free radicals. Vitamin C is a scavenger of free radicals which breaks them down. <sup>(29)</sup>

**Uses :-** ○ Amla Fruits are largely used in Indian medicines.

- It is used as an acrid , diuretic, refrigerant & laxative .
- Dried Fruits are given in diarrhoea & dysentery.
- They are also administrated in jaundice , dyspepsia and anemia with iron compound .

**TURMERIC :**



**Synonym-** Indian saffron, haldi, haridra

**Biological Name-** curcuma longa

**Biological Source:** Turmeric consists of dried as well as, fresh rhizomes of the plant *Curcuma longa* belonging to the family Zingiberaceae.

**Family-** zingiberaceae

**Geographical source-**Native to southern India and Indonesia, turmeric is widely cultivated on the mainland and in the islands of the Indian Ocean.

**Macroscopic Characters :-**

Primary rhizomes ovate , oblongs or pyriform and are called in commerce as bulb or round turmeric where as the lateral rhizomes are more cylindrical and often short branched and are they are called long turmeric.

**Phyto-constituents:** Turmeric contains a yellow coloured substance known as curcuminoids. The chief component of curcuminoids is known as curcumin (50-60%). It also contains volatile oil, resin, camphor, camphene etc.

**Activity :** The chief constituent of Turmeric is curcumin which acts as a superoxide scavenger & as a singlet oxygen quencher. Therefore, the anti-ageing property of Turmeric is mainly due to the curcumin. <sup>(29)</sup>

**Uses-**

- Improve Skin health.
- Fight inflammation.
- Provide glow and luster to skin.
- Reduce tanning of skin.
- Reduce dark circles.
- Protect against environmental damage.

**Biological Sources :-** It Consists of all aerial parts of plant known as *Azadirachta indica* , Family

**Geographical Source :-** It Is Found in India , Pakistan , Banglades , Sri Lanka, Thailand , Malaysia ,

**Neem :**

**Synonym :-** Margosa .

Meliaceae.

Mauritius, Fiji, South Africa and East Africa.



**Macroscopic Characters :-**

**Leaves :-** Alternate, exstipulate, Imparipinnate Leaflets 5.0-10 cm in length lanceolate closely clustered towards the ends of branches. The Leaves have serrate margin, green colour and bitter to test.

**Bark :-** They are thick, rough, brown in colour longitudinally and obliquely furrowed. Internally starchy white, laminated with characteristic smell of neem and bitter in taste.

**Chemical Constituents :-** Chemicals are isolated from the plant belong to the classes diterpenes (Sugiol),

nimbol (Bark), triterpenes: stmasterol (leaf) etc. The neem leaves contain not less than 1.0% w/w of Rutin.

**Activity :** Relieves skin dryness, anti-bacterial, antifungal. (29)

**Uses :-**

It has been studied scientifically and reported that it contains different chemical which have insect repellent

, antifeedant, nematicide and antimicrobial properties. The seed oil has spermicidal activity.

**Experimental work-****Preparation of Extract:**

The fresh leaves of the plant were taken washed with water and grounded into a paste for further extraction.

**Extraction with water (Active A):**

- 300g of fresh *A. marmelos* leaves paste prepared above was taken.
- The leaves were extracted with water for 12 hours at room temperature.
- Extraction was carried out by Maceration method.
- The supernatant after 12 h was filtered out.
- The extract was labelled as Active A (Liquid form).

**Extraction with chloroform (Active B):**

- The supernatant was filtered out and leaves were air dried for further extraction process with chloroform.
- The extraction method was carried out by Maceration method.
- This process was repeated successively with chloroform for 72 hours at room temperature until the color of the extract appeared pale.
- The extract obtained was filtered using Whatmann No.1 filter paper.
- The extract was dried on water bath until the constant weight with dry mass was obtained for solvent extract.
- This residual extract was stored in refrigerator at 4°C in small sterile glass bottle and labelled as Active B (Dried form)

**Formulation of Moisturizing Cream Base:**

1. Simple oil in water base was selected, so that it doesn't interfere with the evaluation of moisturizing property of Active.
2. The cream base was formulated by the given procedure-
  - All the ingredients of phase A (oil phase) and phase B (water phase) were taken in separate beakers.
  - They were allowed to melt completely by heating up to a temperature of 70-80°C.
  - Then the oil phase was added to the water phase with constant stirring until a cream is formed.
  - The cream was triturated to the desired consistency and appearance. (31)



**Table No.3.Formulation Of Cream<sup>(32)</sup>**

SR. No.	INGREDIENTS	QUANTITY
1	Beal	4 gm
2	Amla	2.5gm
3	Tulsi	1.5 gm
4	Turmeric	2 gm
5	Neem	0.5 gm
6	Bees wax	3 gm
7	Liquid paraffin	10ml
8	Borax	0.2 gm
9	Methyl paraben	0.02gm
10	Rose oil	Q.S.

**Formulation of cream :**

Heat liquid paraffin and beeswax in a borosilicate glass beaker at 75 °c and maintain that heating temperature (oil phase). In another beaker, dissolve borax, methyl paraben, in distilled water and heat this beaker to 75 °c to dissolve borax and methylparaben and to get a clear solution. The slowly add this aq.phase to heated oily phase. The add a measure amount of beal extract, turmeric extract,amla extract, neem extract,and stir vigorously until it form a smooth cream the add afew drops of rose oil as fragrance.<sup>(33)</sup>

**Evaluation parameters for moisturizing cream :****Physical evaluation-****Irritancy-**

Mark the area (1 cm<sup>2</sup>) on the left-hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edemaif any for an interval up to 24 h and reported.

**Wash ability :**

A small amount of cream was applied on the hand and it is then washed with tap water .

**Ph :**

0.5 g cream was taken and dispersed in 50 ml distilled water and then PH was measured by using digital PH meter .


**Viscosity :**

Viscosity of cream was done by using Brooke field viscometer at a temperature of 25 °C using spindle No.

63 at 2.5 RPM .

**Phase separation :**

Prepared cream was kept in a closed container at a temperature of 25-100 °C away from light. Then phase separation was checked for 24 h for 30 d. Any change in the phase separation was observed/checked .

**Spreadability :**

The spreadability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spreadability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation. Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted.

$$\text{Spreadability} = m \times l/t$$

Where,

m= Standard weight which is tied to or placed over the upper slide (30g) l= length of a glass slide (5 cm) t= time taken in seconds. Greasiness

Here the cream was applied on the skin surface in the form of smear and checked if the smear was oily or grease-like .(34)

**Result-**

Test	Poor	Good	Very Good	Excellent
Irritancy				✓
Wash ability			✓	
PH		✓		
Viscosity		✓		

Phase separation

Spred ability

## Conclusion:

Thus, from the results, in the study Aegle Marmelos was explored for its moisturization property on skin. It can be concluded Aegle Marmelos extract increases the skin hydration. can be effectively used as skin moisturising agent in formulated cream. Moisturising cream with 3% Aegle Marmelos extract gives good moisturization as compared to simple cream base. The water extract of Aegle Marmelos gives better skin hydration as compared to chloroform extract.

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