

PREPARATION AND EVALUATION METHODS OF HERBAL BODY LOTION - A REVIEW

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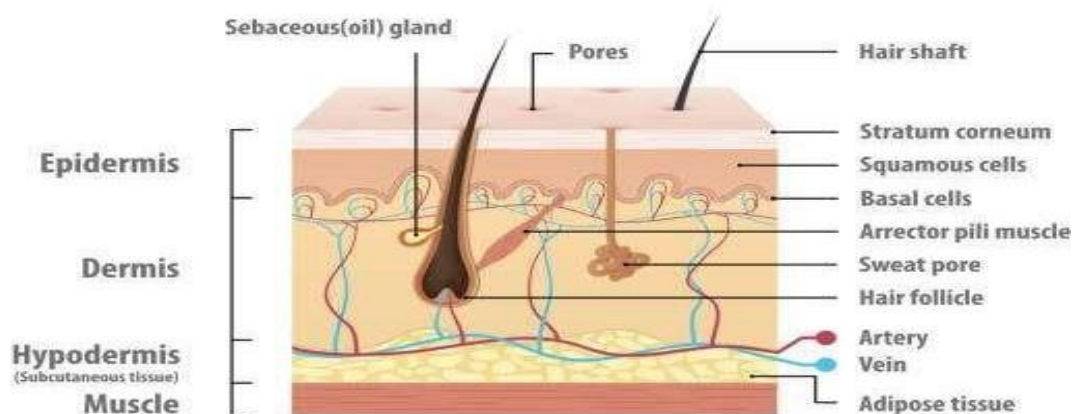
ABSTRACT

Herbal cosmetics are mixtures intended to enhance and beautify human appearance. This study set out to create and evaluate a herbal antibacterial lotion recipe including a fruit extract with an alcohol basis. The active ingredients in *Phyllanthus emblica* leaf and *Neem* have been shown to have tremendous promise for treating a wide range of health ailments in recent studies conducted in many regions of the world. *Neem* and *Phyllanthus emblica* formulations are effective against microbial/worm infestation. It has antibacterial, anti-inflammatory, and anti-cancer properties. Throughout the research period, the produced lotion showed satisfactory homogeneity, pH, consistency and spreadability, and no signs of phase separation. During the course of the investigation, the created lotion's stability characteristics—such as its nature, viscosity, and scent—remained mostly unchanged.

KEYWORDS: Formulation, Evaluation, *Phyllanthus Emblica*, *Neem*, etc.

INTRODUCTION

STRUCTURE OF THE SKIN



The skin serves a variety of purposes and is regarded as the body's biggest organ. The skin regulates body temperature, provides protection, aids in metabolism, and senses.^[1] The two primary areas of the skin are

- Epidermis
- Dermis
- Everyone contributing a unique role to the skin's overall function. Adipose tissue is stored in the underlying hypodermis, also known as subcutaneous connective tissue, to which the dermis is linked. This hypodermis is known as the Superficial fascia of gross anatomy.^[2]
- The skin is an intricate organ. There are 650 sweat glands, 20 blood arteries, and over 1,000 nerve endings in one square inch of skin on average.^[3] Though the skin is only a few millimetres thick, it accounts for approximately one-seventh of an individual's overall weight.

SKIN LAYERS

Epidermis

The outermost layer is called the epidermis. The waterproof layer that gives skin its colour is this. Its primary functions are:^[4]

- To produce new skin cells;
- To impart colour to the skin;
- To shield the body from the outside environment.
- There are no blood vessels in the epidermis. Melanocytes generate a pigment called melanin, which is what gives skin its colour. These shield the skin from UV radiation and are located in the epidermis.

Dermis

Collagen, elastic tissue, and other extracellular elements such as nerve endings, hair follicles, glands, and vasculature make up the fibrous dermis.^[5] The dermis's functions include supporting and shielding the skin's outer layers, helping in thermoregulation, and facilitating feeling.

Hypodermis

The lowest layer of skin on your body is called the hypodermis. It serves a variety of vital purposes, including as energy storage, bridging the gap between your skin's dermis and your muscles and bones, insulating your body, and shielding it from injury. Your skin begins to droop and your hypodermis shrinks with age.^[6]

The layer of hypodermis consists of:

Adipose tissue: Adipocytes make up the majority of the fat tissue in the adipose tissue.

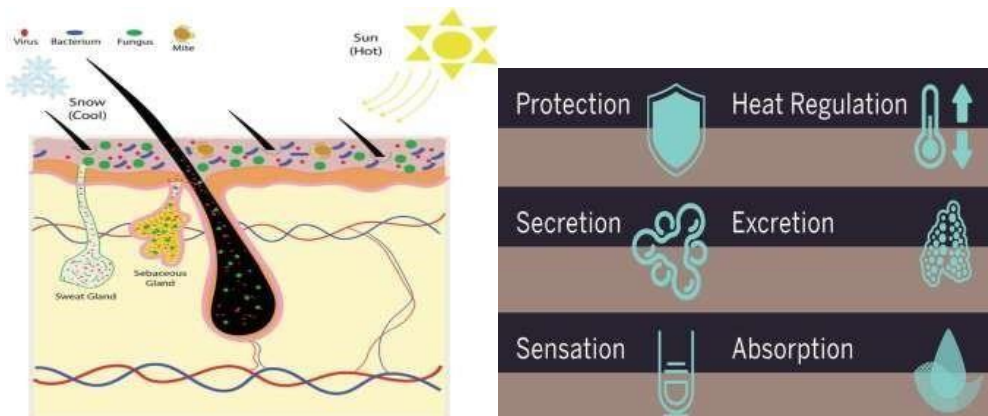
Blood vessels: Veins, capillaries, and arteries are examples of blood vessels.^[7] They eliminate waste materials from your body, assist oxygenate your body's essential organs, and circulate blood throughout it.

FUNCTIONS OF SKIN

Offers a barrier of defence against dangerous materials and mechanical, thermal, and physical harm.^[8]

- Prevents moisture loss.
- Lessens the negative effects of UV radiation.
- Serves as a sensory organ (feels temperature, detects touch).

- Aids in controlling temperature.
- An organ of immunity to identify infections, etc.



INTRODUCTION OF HERBAL LOTION

- Herbal lotions are concoctions made with phytochemicals derived from various plant sources, which impact skin functions and supply essential nutrients for maintaining healthy skin.^[9]
- A natural and safe alternative to chemical-based formulations is a herbal lotion that effectively blocks odours without posing any harm.
- Lotions are applied directly on the body and come in a semi-solid state.^[10]
- Herbal lotions are described as products that are made using different cosmetic substances that are allowed to be used as a basis, and then one or more herbal ingredients are added to give a specific cosmetic benefit.^[11]
- The cream serves as:
 - Calming
 - Soothing
 - Protective
- Lotions are described as a monophasic or biphasic solution, emulsion, or suspension designed to be applied frictionlessly on unbroken, broken, or inflammatory skin. There are four different types of lotions: therapeutic, simple, emulsion, and suspension.
- Herbal lotion thoroughly nourishes and moisturises skin while absorbing swiftly into the skin. Because of its natural qualities, skin becomes elastic, smooth, soft, and radiant while also maintaining the right pH balance.^[12]



TYPES OF HERBAL LOTION**FACE LOTION**

These are also known as bleaching creams, and they do more to conceal skin tone than to lighten it. similar to whitening lotions.^[13]

**FORMULA**

Alum : 10 Parts

Zinc Sulfate: 1 parts

Glycerine: 1 Parts

Tincture of benzoin: 1 Parts

Essence of Rose: 30 drops

SHAVING LOTIONS

The content of after-shave lotions is often similar to that of astringent lotions, with a larger percentage acting as a moderate antiseptic to help prevent infection of any abrasion.^[14]

HAIR LOTION

The hair follicles are stimulated with hair lotion. Typically, they are scented with stimulating oil.^[15]

ADVANTAGE

- They have no adverse effects and don't cause an allergic reaction.
- They blend in effortlessly with skin and hair. Compared to synthetic cosmetics, they are more effective when used in modest quantities.
- Plant extracts reduce the bulkiness of cosmetics and provide the right pharmacological effects.
- Easily available & found in large variety & quantity. Easy to manufacture and chief in cost.

DISADVANTAGE

- Herbal drugs have slower effects as compare to Allopathic dosage form. also it requires long term therapy.
- Taste and odour are difficult to disguise.
- The majority of natural medications are not readily accessible.
- The manufacturing process is intricate and time-consuming.
- No pharmacopoeia specifies a particular method or component that must be utilised in any herbal cosmetic.

FORMULATION OF EMBLICA LOTION**• Formulation of lotion**

The lotion was created by quickly combining the non-polar phase with the polar phase to prevent the separation of the water and oil phases. After melting together, the non-polar phase was gradually added to the heated polar phase mixture.^[16] Because P.E. has properties suitable with water and A.S. has characteristics compatible with oil phase Contents according to phase are provided below, the following formula was utilised for the manufacture.^[17]



- **Required material**

The following materials were acquired from R. S. Enterprises, Jaipur, Rajasthan: ferric chloride, glacial acetic acid, concentrated sulfuric acid, diluted ammonia solution, chloroform, Fehling's A and B solution, sodium picrate solution, and biuret's reagent.^[18]

Among the tools used are an electric mixer, a Soxhlet apparatus, a rotary evaporator, beakers, muslin fabric, a weighing scale, test tubes, test tube holders, and a digital water bath.^[19]



Preparation of extract

Each of the 50 grammes of dried fruits were crushed with the separated shells using an electric mixer to create a coarse powder. After that, this was put in a muslin bag and subjected to a 24-hour Soxhlet extraction process at 65° C using 90% ethanol as the solvent. The solvent was extracted from the ethanolic extract of the A. S. and P. E. fruits using a rotary evaporator set at a standard temperature of 45° C.^[20]



t	COMPONENT	FUNCTION	F1 CONTENT % (W/W)	F2 CONTENT % (W/W)
1	Extraction A.S. fruits	Antimicrobial	1	1
2	Extraction P.E. fruits	Antimicrobial	1	1
3	Bentonite	Thickening agents	2.5	2.5
4	Methyl Paraben	Preservative	0.05	0.05
5	Glycerine	Humectant	1.5	1.5
6	Triethanolamine	Neutralizer	0.45	0.45
7	Water	Diluent	38.9	38.2
8	Cetyl Alcohol	Co-emulsifier	1.5	2
9	Stearic Acid	Emulsion	0.6	0.8
10	Coconut oil	Occlusive	2.5	2.5

• **FORMULATION OF ALOE VERA LOTION**

• **Aloe Vera gel**

Aloe Vera leaves that were fresh, mature, and healthy were gathered and cleaned with distilled water.^[21] The outer portion of the leaf was then cut using a sterile knife once the leaves had properly dried. The colourless parenchymatous tissue, or aloe vera gel, was then cut out using a sterile knife.²² After that, the fibres and contaminants are removed by filtering. The preparation then made use of the filtrate, also known as the filterproduct, which is a transparent aloe Vera gel.^[23]



Is applied as a moisturiser, helps heal burn wounds, and minimises acne and pimples. Is used to the skin to lessen scarring, pigmentation, redness, and itching.^[24] It also serves as an antifungal and anti-inflammatory agent. Aloe Vera gel moisturises the skin and also helps to relieve or calm certain elements icy cuts. Your skin may benefit from aloe vera gel in both hot and cold climates. Aloe Vera gel may accelerate healing and help your tissues regenerate more rapidly if you have moderate frostbite-related skin damage.^[25]



- **FORMULATION OF NEEM, TULASI & PAPAYA**

19 grammes of crushed neem leaves were macerated in 150 millilitres of distilled water and left for three days in order to perform the extraction.^[26] The solution was placed in the rotary evaporator for about 30 to 40 minutes after three days. Following the method's completion, the extracted material was allowed to dry further in a water bath for around nine to eleven hours, or until it took on a sticky consistency.^[27]



The (papaya fruit was cut into pieces & the seeds were removed from it. Then the pieces were crushed by using mortar pastel, After fine grinding, it was taken into a beaker & ethanol (100ml) was put into the beaker & kept it for 20-25mins for maceration process.^[28]



SL NO.	INGREDIENTS	QUANTITY	USE
1	Neem Extract	3mg	Helps to fight skin infections, promote wound healing & as anti-aging
2	Tulsi extract	3mg	Prevent blackheads, acne & relieves skin infections
3	Papaya pulp	10mg	Exfoliates the dead skin cells & cures skin impurities
4	Glycerine	2ml	Used as humectant
5	Lemon oil	1.5ml	Anti-microbial
6	Rose oil	Q.S	For fragrance
7	Gum tragacanth	4.5mg	As emulsifier & stabilizer
8	Distilled water	30ml	Used as vehicle



• **FORMULATION OF MENTHAL**

• **Formulation method of lotion**

- Calculate how much of the gel formulation above. Weigh every additional component used in the recipe.
- Grab a large mixing bowl made of plastic or glass.

- Fill the mixing basin with the measured aloe vera gel.
- Next, gradually add the remaining formulation ingredients, such as the calculated amounts of coconut oil, rosewater, vitamin E, glycerin, essential oil, and arrowroot powder.
- Thoroughly combine all of the ingredients in the bowl. Lotion made of herbs was ready.^[29]



Procedure

1. Accurate weighing or measuring of the necessary quantity of each ingredient is required.
2. Measure out 0.2 millilitres of menthol and add it to 9 millilitres of alcohol while also adding 0.5 grammes of tragacanth.
3. Fill the capacity to 100 ml with water and add the determined amount of glycerine.
4. Fully combine the ingredients and stir until a smooth mixture is achieved.^[30]



SL NO	INGREDIENTS	QUANTITY (%)
1	Menthol	0.2
2	Powdered Tragacanth	0.5
3	Alcohol	9
4	Glycerine	4.5
5	Water	85.8

EVALUATION STUDIES OF HERBAL LOTION

pH: The pH of the lotion will be measured using a digital pH tester. After making a 10% lotion solution, the pH of the mixture will be tested and recorded using a pH metre.^[31]

Viscosity: Using a Brookfield viscometer, the LV-64 spindle will be utilised to test viscosity. It will be decided to rotate at 25 revolutions per minute. The prepared lotion will be submerged straight into the spindle to measure its viscosity.^[32]

Washability: After applying a little amount of lotion, the hand was let to run under the force of running tap water for ten minutes.

It will be observed when the lotion will be fully eliminated. Look: The lotion's colour, smell, and homogeneity were assessed visually.^[33]

Spreadability: The spread ability will be measured in terms of the number of seconds it took for two slides separated by a cream layer under a specific load. The ability to spread is improved by a shorter gap period between the two slides. Standard-sized glass slides were taken in two sets. After that, a slide with the right dimensions will be chosen, and the cream formulation will be put on it.

After that, another slide will be positioned over the formulation. The cream between the two slides will be then evenly compressed to produce a thin layer by applying a weight or other force on the upper slide.

After that, the weight will be taken off, and any extra formulation that had stuck to the slides will be scraped off.^[34]

Appearance: The lotion's colour, odour, and homogeneity were assessed visually. Twelve Reliability and Grassiness On the skin, these two parameters were used. They were examined by using skin care products.

The rate at which a product is thought to be absorbed by the skin is called its absorbency by observing changes in the skin's surface. Sluggish, moderate, and fast¹⁶.^[35]

Viscosity: Using a Brookfield viscometer spindle no. 7 and speed 60 rpm at 25 °C⁷³, the viscosity of the produced gel will be measured. The viscosity of the lotion will be tested when it will be immediately submerged in the spindle.^[36]

	ORGANOLPTIC PARAMETER
TEST	DESCRIPTION
Appearance	The appearance of the lotion was observed by visualexamination.
Colour	The colour of the cream was observed by visual examination.
Odour	The odour of the lotion was tested by smelling. ^[37]

PHYSIOCHEMIOCAL PARAMETERS

pH	pH of prepared herbal lotion was measured by using both PH paper and digital PH meter. ^[38]
Spreadability	Spread ability of formulated lotion was measured by placing sample in between two slides then compressed to uniform thickness by placing a definite weight for defined time.
After -fill	Emolliency slipperiness and amount of residue left after the application of the fixed amount cream was found.
Types of Smear	After application of the lotion, the type of film or smear formed on the skin were checked. ^[39]
Irritancy test	The lotion was applied to a specific area of the left hand dorsal surface. Irritancy, erythema, oedema were checked upto 24 hrs and reported.
Ease of removal	The ease of removal of the cream applied was examined by washing the applied part with water.
Test for Microbial growth	To check the microbial growth, the formulation was placed in the centre of the petri dish, and then the plate were incubated at 37 C for 72hrs. ^[40]

MARKET AVAILABILITY

With the offline and online segments, the herbal cosmetics market is projected to increase by USD 34–64 billion at a compound annual growth rate (CAGR) of 6.83% between 2023 and 2027.

According to Harry (1962), the primary goal of cosmetic application is to improve the overall appearance of the face and other body parts while significantly reducing the appearance of skin imperfections. It is used to preserve or enhance the condition of the skin.

There is a growing demand for herbal cosmetics in the personal care system and a rise in the use of herbal lotions. The biological activities of skin are impacted by the usage of bioactive substances in cosmetics.

The body lotion is made up of extremely effective herbal elements that give the skin a dull, radiant appearance.



BIOTIQUE White Orchid Brightening Body Lotion -180 ml

The market for herbal beauty products was estimated to be worth US\$ 104.9 billion in sales in 2021. From 2022 to 2030, the market is expected to grow at a compound annual growth rate of 4.7%. The global population's changing lifestyles and increasing disposable money are driving up demand for herbal beauty products.



Renz Global Herbal Body Lotion 100% Natural

Because they protect your skin from potentially dangerous elements rather than exposing it to them, herbal skin care products help prevent premature skin aging. You'll only receive the finest ingredients for that youthful glow thanks to the "no artificial additives" policy.

They are devoid of any dangerous synthetic ingredients that have been shown to be damaging to human skin. Herbal goods contain a variety of plant components and plant extracts. They also include organic ingredients that maintain skin healthy, radiant, and glossy, such vitamins and minerals.



MAMAEARTH Deep Hydration Non Greasy Formula Made with Natural Ingredients 40ml.

The market is expanding significantly because consumers are becoming more conscious of the need of skin hygiene. All skin types—oily, dry, and normal—can use these lotions. High consumer demand for various cosmetics can be substituted by skin-care and personal hygiene goods, such as body lotions, which support the body lotion production sector. Lotion consumption has increased as a result of several reasons related to skincare. Body lotions with anti-aging ingredients, UV protection, and skin-slowing properties are in constant demand. As a result, it presents a fantastic chance for future development and expansion.

CONCLUSION

Evaluation tests for herbal lotions are research & experiments conducted during manufacture that, on occasion, should be conducted post-production by researchers & regulatory bodies. This study tested and assessed a herbal lotion formulation in terms of its physiological characteristics (PH, spread-ability, after- fill, forms of smear, ease of removal, irritancy test, and test for microbiological growth) and organoleptic features (appearance, colour, and scent). The findings show that the formulation satisfies the norms, proving its chemical soundness.

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