Formulation and Evaluation of Herbal Shower Gel

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Abstract:

Herbal products have grown in importance on a worldwide scale in both medicine and business. Although herbal products are becoming more and more popular, both industrialized and developing nations have serious concerns about their efficacy, safety, and quality. Herbal body wash softens and gently cares for skin. In order to create solutions that successfully cleanse, nourish, and protect the skin without irritating or drying it out, the science underlying body wash composition is crucial. Human skin is the natural barrier of body, particularly for the appearance of body. In the normal physiological, the sebaceous glands secrete sebum attached to the skin surface, forming a thin layer to keep the skin soft and smooth. The present research has been under take with the aim to formulation and evaluation of poly-herbal shower. Poly-herbal shower gel was formulated by adding the extract. Herbal body washes are a viable and environmentally responsible substitute for conventional cleaning products because of their natural ingredients.

Keywords: Shower gel, antibacterial, Cleaning Skin, Biodiversity, Fragrance, Turmeric, betal leaf.

INTRODUCTION:

The liquid soap composition was invented by William Shepherd in 1865, and shower gel is a derivation of that product that was originally introduced in 1800^[3-5]. Shower gel, which cleans the entire body while bathing and showering, was later made possible by advancements in contemporary chemistry.

Shower gel (also shower cream or body wash) is a specialized liquid product used for cleaning the body during showers. Not to be confused with liquid soaps, shower gels, in fact, do not contain saponified oil. Instead, it uses synthetic detergents derived from either petroleum or plant sources. Maintaining hygiene is an important habit that helps avoid illness and promote health, particularly when it comes to personal hygiene. Maintaining good hygiene not only makes healthier but also serves as a major defense against a number of communicable diseases, including the faecal-oral infections. ^[4-8]Improving health and reducing the spread of disease are the two main advantages of good personal hygiene which ultimately improve nutrition and income equality. According to the World Health Organization, hygiene refers to the behaviors and surroundings that support

maintaining one's health by halting the spread of illness. Many people equate hygiene with cleanliness, yet maintaining sterility and cleanliness is a complex process that combines a number of different techniques and procedures. ^[9]The likelihood of accomplishing the primary objective necessitates a paradigm change in the way that illness, education, and therapy are traditionally approached. Maintaining good personal and household hygiene can also serve as a preventative measure against impending diseases. Thus, maintaining good hygiene is essential to reducing the spread of infections in daily life. One of the most important strategies for preventing the spread of infectious diseases is probably washing your hands with soap.

SKIN OVERVIEW:



Fig 1: Skin Anatomy

• Skin

About 15% of an adult's body weight is made up of the skin, the biggest organ in the body. Among other things, it prevents excessive water loss, controls body temperature, and shields the body from environmental, chemical, and physical threats.

Skin components include

- epidermis
- The dermis
- Appendages of skin
- Fat beneath the skin
- **Epidermis** -The stratum corneum, stratum spinosum, stratum granulosum, and basal cell are the four that make up the epidermis, arranged in ascending order of layering. going all the way to the dermal junction with the basal cell layer, beginning on the exterior of the stratum corneum. It serves as a barrier to stop the entry of microorganisms.
- **Basal Cell Layer:** We call the growing, undifferentiated cells "basal cells." The basal layer of the interfollicular epidermis contains skin stem cells, which develop into keratinocytes. In the basal cell layer, daughter cells typically move upward and initiate differentiation to maintain skin homeostasis.
- **Spinosum Stratum:** Keratinocytes are the cells that grow from the basal cells beneath the stratum spinosum, which is located above the basal layer. The horny stratum corneum is primarily composed of keratin, a fibrous protein produced by keratinocytes.
- **Granulosum Stratum:** A thin layer of the epidermis contains these cells. Keratinocytes, or granular cells, migrate from the stratum spinosum below. These have keratohyalin granules and protein structures that encourage keratin cross-linking and hydration.
- **The Stratum Corneum:** Keratin is prevalent in the big, flat, polyhedral, plate-like cells that constitute the stratum corneum. The vertical layers that make them up vary in thickness; the palms and soles may have up to 100 layers, while the majority of body surfaces have 15 to 25 layers. The stratum

corneum's job is to create a barrier that shields the underlying tissue from damage, dehydration, contaminants, and mechanical stress.

Dermis-The dermis is a strong but flexible layer of support that contains blood vessels, nerves, and • cutaneous appendages. It interacts with and manages cell activities to maintain structural integrity while being physiologically active.

The Dermis's Structural Elements include

- 1. Collagen
- 2. Elastic fibres
- 3. The matrix of extrafibrillar

The dermis thickness varies from 1 to 4 mm. The majority of the dermal matrix consists of ground material, collagen fibres, and elastic fibres produced by dermal fibroblasts. Collagen accounts for approximately 70% of the dry weight of the skin. The skeletal matrix is composed of elastic fibres and collagen, two fibrous proteins.

Skin appendages are structures that are attached to the skin and perform specific purposes such as heat loss, lubrication, contractility, and sensibility. Hair, sebaceous glands, nails, and arrector cilia are some of the most frequent human skin appendages.

The following are Examples of Skin Appendages:

- Hair Follicle •
- Sebaceous Glands •
- Eccrine Sweat Gland
- Apocrine Sweat Glands •
- Nails •

Fat Subcutaneous-A layer of subcutaneous fat lies between the dermis and the underlying fascia. It shields the body from the cold, acts as a cushion against blunt injury, and gives the body a store of energy

FUNCTIONS OF SKIN

Protective function: The skin serves as the body's initial line of defence. It shields the body from damaging UV radiation, pollution, and infections. The skin is a sensory organ that facilitates the perception of touch, heat, cold, and discomfort. These sensations can result in voluntary movement or regurgitation. Secretory function: Sweat helps regulate body temperature, while sebum smoothest skin. The function of heat regulation. The regulation of body temperature is aided by cutaneous blood flow and perspiration. **Excretory function:** The secretory gland expels urea, salt, water, and fatty substances.

Synthetic function: Vitamin D is naturally produced by the skin using sunlight. The pigment that the skin produces is called melanin.

Water balance: One method the skin regulates the body's water balance is by sweating. **Blood supply**: Eight to ten percent of the blood is stored there.

BASIC CHARACTERISTICS OF SHOWER GEL

1. Fragrance: Shower gels include a greater concentration of olfactory-pleasing chemicals and have lingering scents. Emulsifiers, detergent, and fragranc.^[10]

2. Texture: Shower gels have a thicker, jelly-like substance and are solid. Their viscosity is increased by a thickening polymer

3. Aromatherapy: Essential oils included in many herbal body cleansers offer aromatherapy advantages like energizing or relaxing.

5. Hygiene: There is no bacterial accumulation with shower gels. The remaining liquid is shielded from the elements and physical contact by the containers.

6.Suitability: You should take caution while choosing a cleansing product for your skin if you have rosacea, eczema, acne, or sensitive skin.

ADVANTAGE OF SHOWER

- 1. Good foaming properties (should quickly create high-volume, stable foam).
- 2. Good wettability of dirt and fat on the skin.
- 3. Not causing the skin dryness and be safe for the environment.
- 4. Ability to disperse emulsified dirt particles in the bath.
- 5. Good performance in the presence of hard water.
- 6. Improving skin condition after bathing.
- 7. not irritating effect to the eyes. ^[11]

• DISADVANTAGES OF SHOWER GEL

Shower gel contains the majority of common parabens, which are used as preservatives. They upset our hormonal equilibrium, which raises our risk of aggressively developing skin, prostate, and breast cancer.

• USES OF SHOWER GEL

- 1. A specialty liquid substance called shower gel is used to clean the body when taking a shower.
- 2. A shower gel that nourishes and deeply cleanses your skin enhanced with glycerin, vitamin E oil, aloe vera, and coffee robusta seed powder.
- 3. Packed with anti-oxidant qualities that enhance offline lines' appearance deeply hydrates the skin to leave it feeling ^[11]

Pharmacognosy of Active Ingredients

1. Betal Leaf :

Scientific name - Piper betle L. Botanical name – Betal leaf family - Piperaceae



Fig 2: Betal leaf

Biological source

The dioecious perennial creeper Piper betale Linn. (Piperaceae) The betel, or Piper betle, is a Southeast Asian native flowering plant that belongs to the Piperaceae family of peppers. This dioecious evergreen vine with

glossy heart-shaped leaves and white catkins. Betel plants are grown for their leaves, which are most frequently used to flavor areca nut chewing (also known as betel nut chewing).^[12]

Chemical Constituent:

Its chemical constituents include terpinene, P-cymene, carvacrol, chavicol and its derivatives, allyl catechol, eugenol, estragole, oxalic acid, malic acid, and amino acids.

Morphological features

- It is a semi-woody branching vine that can grow either sprawlingly or climbingly. •
- Its leaves are carminative, aphrodisiac, tonic, laxative, and appetite-boosting. •

Uses of Betal Leaf In Shower Gel

• Betel leaf extract is added to this unique shower gel to help cleanse and revitalize the body. The betel leaf plant, which has its origins in south and southeast Asia, has long been utilized in medicine. Vitamin C is abundant in betel leaf extract.

• To get a smooth paste, grind a few betel leaves.

2. TURMERIC

Synonyms. Saffron Indian; haldi (Hindi); Curcuma; Rhizome cur-cumae. Botanical Name: Curcuma longa and Curcuma aromatica Family: Zingiberaceae



Fig 3: Turmeric Rhizome

Biological sources: The root of the turmeric plant (Curcuma longa), a member of the ginger family and native to India and other Southeast Asian nations, is used to make turmeric powder. Today, the plant is grown in many tropical places worldwide.

Chemical Constituents-Curcuminoids, a yellow coloring substance, make up 5% of turmeric, while essential oil makes up 6%. The chief constituent of the colouring matter is curcumin I (60%) in addition with small quantities of curcumin III, curcumin II and dihydrocurcumin. The volatile oil contains mono- and sesquiterpenes like zingiberene (25%), α-phellandrene, sabinene, turmerone, arturmerone, borneol, and cineole. Choleretic action of the essential oil is attributed to β-tolylmethyl carbi



Fig. 3 Structure of Curcumin

Uses of turmeric in shower gel

- Anti-inflammatory and Antioxidant properties.
- Helps with skin irritation and redness.
- Deeply cleansing and hydrating.
- Brightens complexion.
- Balances and evens skin tone and texture.

3. Almond Oil :

Synonyms: virgin Almond oil

Botanical Name: prunus Amygdalus Dulcis

Family: Rosaceae

Scientific name -prunus Amygdalus Dulcis

Biological Source -Almond oil is a hard and fast oil received through seed of prunus Amygdalus belong to family Roseceae



Fig.4 Almond Oil

Chemical constituents

Protein, fiber, vitamin E, iron, potassium, zinc, niacin, thiamine, and folate are all abundant in almonds. According to the reviewed studies, almond oil appears to include a substantial quantity of tocopherol and phytosterol content, as well as poly and monounsaturated fatty acids, with oleic acid being the predominant ingredient.

Uses

Almond oil has been promoted for its ability to shield your skin from sun damage, strengthen the skin's protective barrier, and reduce the indications of ageing. Omega 3 fatty acids, which are found in it, can shield you from the sun's harmful UV rays and help you avoid age spots.

METHODOLOGY

- 1. Choose natural ingredients
- 2. Pre-formulation study
- 3. Formulation of herbal body wash
- 4. Test an evaluate
- 5. Labeling, package and store
- 6. Use as direct ^[2]

Formulation Table:

Table 1 Formulation Table

Sr.no	Name of ingredient	F1	F2	F3	Uses
1	Betal leaves extract	1.5 ml	2 ml	3ml	Antibacterial
2	Turmeric extract	1 ml	2 ml	1 ml	Antioxidant, antiseptic
3	Almond oil	0.5 ml	0.5 ml	0.5 ml	Protectant
4	Sodium sterated	0.23 ml	0.23 ml	0.23 ml	Surfactant
5	carbapol	1 gm	0.95 gm	0.95 gm	Gelling agent
6	Methyl paraben	0.50 gm	0.50 gm	0.50 gm	Preservative
7	triethanolamine	q.s	q.s	q.s	Neutralizer
8	water	q.s	q.s	q.s	Base
9	Rose water	q.s	q.s	q.s	fragrance

METHOD OF PREPARATION SHOWER GEL.

1 .Collection of plant leaves

The plant leaves are collected in herbal garden Saikrupa collage Ghargaon

3. Preparation of extract

A] Betal leaves extract.

Fresh Piper betel leaves were washed properly in distilled water, for decoction preparation requires that the plant material boiled until reduce one fourth of initial volume. The prepared extract are filter and store in well closed container.

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Fig. 5 Extraction process

B] turmeric extract

the plant material boiled until reduce one fourth of initial volume. The prepared extract are filter and store in well closed container.

4. Preparation of gel

1 gm carbapol dissolved in 100 ml water Kept on magnetic stirrer mixing for 15 Min. Add dropwise triethaloamine until gel is Formed

Appearances

a) Color Physical parameter

such as color, odor, and appearance were checked the batch f1 shows pink, rose fragrance. F2 batch shows yellow color, rose fragrance; batch f3 shows pink, rose fragrance ^[13].

b) pH

pH determine by using ph meter take pH paper deep into the water take 1g gel dissolve in 10ml water this compare with solution take into the beaker, pH paper deep into the beaker check pH paper PH meter and determine pH color and pH of the gel

d) Wash Ability

The shower gel was applied hand and was observed under running water^[13].

e) Spread Ability Test

The Spread-ability of the gel checked by using glass slide 1g of sample Placed on slide and checked Spreadability of gel ^[13].

f) Foaming Test

Take 1g of gel in a 50ml Shake it and transfer into measuring cylinder gel stable for 5min and check the foam retention ^[14].

g) Viscosity:

Determine by using Brookfield viscometer the gel sample placed in a Brookfield viscometer and determine the viscosity of sample^[14].

OBSERVATION TABLE

		Table no -2		
Sr. no	parameters	F1	F2	F3
1	рН	6.1	6.9	6.5
2	Color	pink	yellow	pink
3	Fragrance	Rosey	Lemon oil	Rosey
4	Irritability	Non Irritance	Skin dry	Non irritancy
5	Washability	Easily Washable	Easily Washable	Easily Washable
6	Spreadability	Easily spread	Easily spread	Easily spread
7	Grittiness	No	Small gritty	No
			particle	

Results and Discussion

1.**Collection of plant and extraction**: Leave are collected from plant of piper betel. and get air dried for 2-3 days. After drying we perform decoction process for with water use as solvent

2.**Phytochemical screening**: For evaluation and identification of phytochemical present in plat perform Various test is, which are describe in table.

Test	Leaf extract				
Test for alkaloid					
Mayer's test	+ve				
Wagner's test:	+ve				
Hager's test:	+ve				
Dragendroff's test:	+ve				
Test for phenolic compound and tannin					
Ferric chloride test:	+ve				
Lead acetate test:	+ve				
Detection of Saponin:					
Foam test:	+ve				
Test for phytosterol					
Salkowoski test	+ve				
Test for carbohydrates					
Molish test	+ve				
Barfoed's test	-ve				
Benedict test	+ve				

3.Formulation of herbal gel: Formulation of gel contain various excipient which are described in table. Every excipient has specific role in gel like gelling agent surfactant, preservatives. Formulation methods for gel also describe. There is interaction between +the leaf extract and excipient use in formulation of shower gel.

4.Evaluation test: Prepared gel was evaluated for various parameters such as physical appearance, pH, viscosity, spread ability. Observation reveals that gel were having smooth texture and elegant appearance. pH of gel having range between 6 - 7. In gel there is absence of lump. It having good spread ability.



Fig.6 Alkaloid test

4. Antibacterial:

Method- Zone of Inhibition Materials and methods: Media: Nutrient Agar for Bacterial cultures, Yeast Glucose Agar Cultures used: Bacterial cultures: *Bacillus subtilis* NCIM 2063, *Escherichia coli* NCIM 2065 Fungal Culture: *Aspergillus niger* NCIM 501 Incubation temperature: 37°C Incubation time: 24 Hrs. Std.: Amoxicillin and Fluconazole

Observation

The observation of each sample was recorded against each microorganism.

Sample Coding:

C- Control R1- Standard R2- Herbal Shower gel



Zone of Inhibition against Bacillus substilis



Zone of Inhibition against Staphylococcus aureus



Zone of Inhibition against Escherichia coli



Zone of Inhibition against Proteus vulgaris



Zone of Inhibition against Aspergillus niger



Zone of Inhibition against Candida albicans

- 1. Sample R2showing very moderate activity against Bacillus subtilis.
- 2. Sample R2 showing Good activity against Staphylococcus aureus.
- 3. Sample R2, showing moderate activity against Escherichia coli.
- 4. Sample R2 showing excellent activity against Proteus vulgaris whereas.
- 5. Sample R2, showing good activity against Aspergillus niger.
- 6. Sample R2 showing excellent activity against Candida albicans whereas.

Formulation F1, F2 and F3 formulation were tested using various parameters, Ph, Color, Odour, Irritability, Washability, Grittiness, Spreadability and Antibacterial Patch of F3 formulation were found very good compared to F1 and F2

CONCLUSION

In conclusion, the formulation and evaluation of an herbal gel for the cleaning your body have demonstrated its potential as an effective and natural remedy. The development of the herbal gel involved selecting specific herbs known for their antibacterial, antioxidant activity. Shower gels offer several advantages over traditional bar soaps, including better hydration, gentler cleansing, and a more hygienic experience. They are also often formulated with natural ingredients and offer a wider range of fragrances and skin-loving benefits. Shower gels are formulated to be moisturizing and often contain ingredients like glycerin or oils that help replenish skin's moisture. This makes them a good choice for those with dry or sensitive skin, as they are less likely to strip away natural oils like bar soaps can.

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