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Formulation and Evaluation of a Poly Herbal Shower Gel

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ABSTRACT

Natural remedies are more acceptable in the belief that they are safer with fewer side effect than the synthetic ones. Herbal formulation has shown growing demand in the world market. The present work deals with the formulation and evaluation of polyherbal shower gel containing Mango butter (*Mangifera indica L.*), Cucumber (*Cucumis sativa L.*). Although various topical herbal formulations are available in the market, the aim of the present work was to make pure herbal formulation with very limited synthetic products. Prepared formulations were evaluated for various parameters like colour, appearance, consistency, foamability, viscosity, foam retention, stability, percentage moisture content, pH and spreadability. The best formulations were selected based on its consistency and the pH with acceptable post-formulation properties. All the formulations were evaluated and F4 formulation of polyherbal shower gel was selected as the best formulation because of its physiochemical characteristics. The formulated polyherbal shower gel was found to be a better alternative for synthetic products which has lesser adverse effect.

INTRODUCTION

1.1 SKIN:

The skin is the body's largest organ accounting for about 15% of the total adult body weight. It performs many functions like protection against the chemical, physical, and external environment as well as prevention of excess water loss from the body and also regulates body temperature.¹

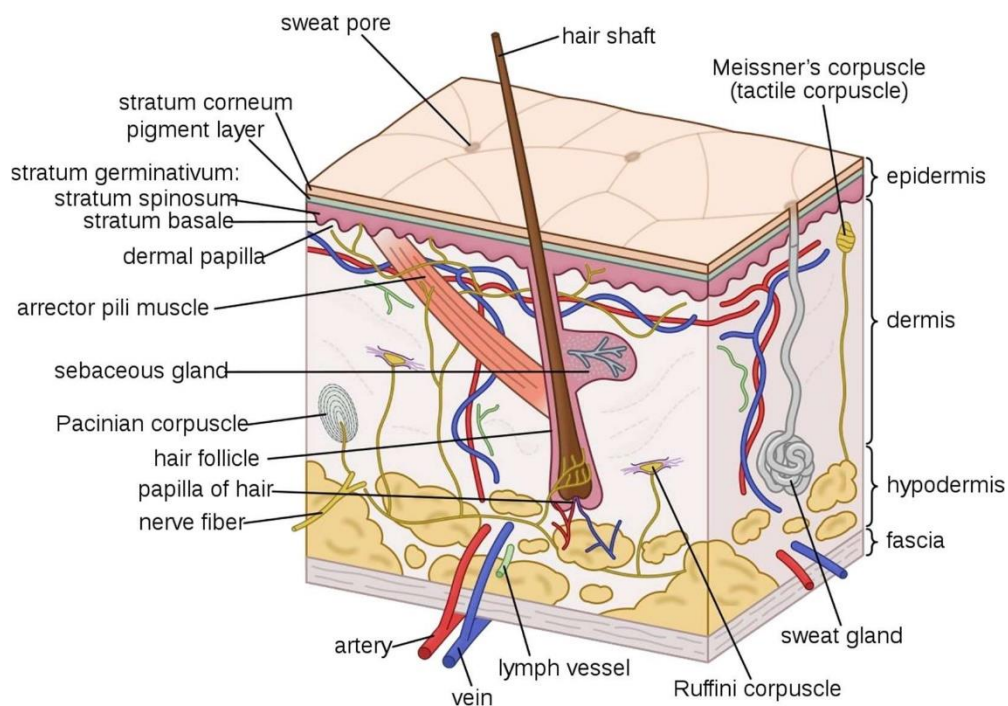


Figure.1: Structure of skin

Components of skin:

1. Epidermis
2. Dermis
3. Skin appendages
4. Subcutaneous fat

EPIDERMIS:

The epidermis is divided into four layers (Layers in ascending order: basal cell, stratum

spinosum, stratum granulosum, stratum corneum). Starting at the dermal junction with the basal cell layer and ending at the outer surface in the stratum corneum. It acts as a barrier against microbial penetration.²

a) Basal Cell Layer

The basal cells are the undifferentiated, proliferating cells. Skin stem cells are present in the basal layer in the interfollicular epidermis, and they bring about keratinocytes. For normal skin homeostasis, daughter cells from the basal cell layer migrate upward and begin the process of differentiation.

b) Stratum Spinosum

The stratum spinosum is located above the basal layer and is made up of keratinocytes, which differentiate from the basal cells beneath them. The keratinocytes produce keratin, a fibrous protein that is the major component of the horny stratum corneum.³

c) Stratum Granulosum

It is a thin layer of cells in the epidermis. Keratinocytes migrating from underlying stratum spinosum called granular cell. These containing protein structures, keratohyalin granules that promote hydration and help to cross linking of keratin.³

d) Stratum Corneum

The cells in the stratum corneum are large, flat, polyhedral, plate-like envelopes filled with keratin. They are assembled in vertical layers that range in thickness from 15 to 25 layers on most body surfaces to as many as 100 layers on the palms and soles. The function of stratum corneum is to form barrier to protect underlying tissue from infection, dehydration, chemical and mechanical stress.¹

DERMIS:

The dermis is a hard but elastic support structure that contains blood vessels, nerves and cutaneous appendages. It provides structural integrity and is biologically active by interacting and regulating the functions of cells.¹

Structural components of the dermis:

1. Collagen
2. Elastic fibres
3. Extrafibrillar matrix

The dermis ranges in thickness from 1 to 4 mm. The dermal matrix is composed primarily of collagen fibres, elastic fibres and ground substance, which are synthesized by dermal fibroblasts. Collagen accounts for 70% of the dry weight of skin. Collagen and elastic fibres are fibrous proteins that form the strong, yet compliant skeletal matrix.

SKIN APPENDAGES

Skin appendages are skin associated structures that serve a particular function including sensation, contractility, lubrication and heat loss. In humans, some of the more common skin appendages are hairs, arrector Pilli, sebaceous glands and nails.⁴

The skin appendages include:

1. Eccrine Sweat Glands
2. Apocrine Sweat Glands
3. Hair Follicle
4. Sebaceous Glands
5. Nails

SUBCUTANEOUS FAT

A layer of subcutaneous fat lies between the dermis and the underlying fascia. It helps to insulate the body from cold, cushions deep tissues from blunt trauma and serves as a reserve source of energy for the body.¹

Subcutaneous fat:

1. Insulates

2. Absorbs trauma
3. Is a reserve energy source
4. Is biologically active

FUNCTIONS OF SKIN

1. Protective function:

Skin is the first line of the defence. It protects our body from harmful UV radiation, pathogen and chemical hazard.

2. Sensory function:

Skin act as sensory organ, it helps to sense touch, pain, heat and cold, resulting in either voluntary or reflex activity.

3. Secretory function:

Sweat helps in temperature regulation and sebum makes skin smooth.

4. Heat regulation function:

Sweating and cutaneous blood flow help in body temperature regulation.

5. Excretory function:

Through the secretory gland water, salt, fatty substances, and urea are excreted.

6. Synthetic function:

Natural vitamin D is synthesized by skin from sunlight. Skin also produces melanin pigment.

7. Water balance:

Skin helps regulate water balance of the body by sweating.

8. Blood reservoir:

It acts as a blood reservoir about 8-10% of total blood.

POLY HERBAL SHOWER-GEL:

The act of keeping ourselves clean is referred to as personal hygiene. Inadequate personal hygiene can lead to a variety of diseases. The majority of commercial soaps contain synthetic materials and chemicals that may irritate or even damage skin. Human skin needs special care in order to heal, improve skin tone, and seem healthy and beautiful. Another good choice are natural herbal soaps.⁵

The usage of herbal products and the acceptance of a more natural lifestyle are becoming more popular these days across the entire world. For a healthy lifestyle, many prefer organic products, herbal remedies, and alternative treatments.

There is a huge demand for herbal cosmetics, and the use of herbal cosmetics in personal care products has increased. All of this resulted from the overuse of synthetic products, chemicals, dyes, and their derivatives during the last century; their manufacturing and use pose a threat to human health and have a number of negative side effects that have led to a wide range of illnesses. Additionally, it significantly contaminated the environment and damaged our ecosystem.⁶

So, a shower gel is a much better alternative for cleaning purposes and also it has advantages like better cleansing and smoothening properties. Using a shower gel is better than using a single bar of soap by multiple users which can reduce the chances of germs spreading from one person to another. Additionally, the choice between shower gel and bar soap can be a matter of personal preference, skin type, and individual needs. It's essential to consider your skin type, any specific skin conditions or allergies, and your personal preferences when choosing between the two. Ultimately, what matters most is using a product that keeps your skin clean, healthy, and comfortable.

MANGO BUTTER

Biological Name: *Mangifera indica* Linn.

Family: Anacardiaceae

Mango (*Mangifera indica* Linn.) is one of the most important tropical fruits in the world. During the processing of mango, by-products such as peel and kernel are generated. Kernels take up about 17-22% of the fruit. The major components of mango seed are starch, fat and

protein. The oil of mango seed kernel consists of about 44–48% saturated fatty acids (majority stearic) and 52–56% unsaturated. Mango seed kernels have a low content of protein but they contain the most of the essential amino acids, with highest values of leucine, valine and lysine. Mango seed kernels were shown to be a good source of polyphenols, phytosterols as campesterol, sitosterol and tocopherols. In addition, mango seed kernel could be used as a potential source for functional food ingredients, antimicrobial compounds and cosmetic due to its high quality of fat and protein as well as high levels of natural antioxidants.

They have strong antioxidant activity and can scavenge a variety of free radicals including reactive oxygen species (ROS) and reactive nitrogen species (RNS).⁷

The phenolic compounds are high value-adding chemicals and are used as ingredients in foods, cosmetics and pharmaceuticals. The potential use of phenolic compounds for the development of new skin care cosmetics has been emphasized. Phenolic compounds can be used as whitening, sun screen and anti-wrinkle agents. Melanin is the root cause for darkening of the skin. Its formation beneath the skin proceeds through a free-radical mechanism. UV-radiations facilitate this chain reaction and it could be disrupted by selective use of compounds, potent enough to inhibit this reaction.⁸



Figure 2: Extracted Mango butter

Cucumber

Biological Name: *Cucumis sativus* Linn.

Family: Cucurbitaceae

Cucumber (*Cucumis sativus* L.) is grown all over the world due to its capacity to flourish in both temperate and tropical climates. As a result, fresh cucumbers are accessible all year.

Cucumber is one of the earliest cultivated crops and is thought to be a native of the Asia continent, with portions of China having temperate weather and sections of southern India having tropical conditions. Cucumber is currently the world's fourth most extensively farmed vegetable crop (after tomatoes, onions, and cabbage), and China is by far the world's greatest producer.⁹

Cucumber offers several skin treatments and natural beauty effects. Cucumber is an excellent cosmetic for rubbing over the skin to maintain it smooth and white. Cucumber slices provide several topical advantages to the eyes and surrounding tissues due to its moisturising characteristics, which assist to reduce dryness, and their high amounts of vitamin K, which aid in the reduction of cutaneous eruptions such as puffiness and dark shadows. Cucumbers contain lignans, which assist to relieve the irritation and inflammation caused by sunburns and bug bites.¹⁰

Cucumber fruit extracts are frequently used as an essential ingredient in a variety of topical skin treatments. By blocking tyrosinase, such formulations have been utilised as a moisturiser and skin toner. Such formulations have also been used to cure wrinkles and cleanse the skin.¹¹ Cucumbers have a strong cleaning function due to naturally occurring.

Organic acids such as glycolic, lactic, and salicylic acids. Glycolic and lactic acids are alpha hydroxyl acids that are used as chemical exfoliants to encourage the natural clearance of dead cells and to maintain the health of the protective surface layers by dissolving the glue-like material in the epidermal layer. The glue-like material promotes dead skin cell layer accumulation, leaving skin dry, dull, and harsh.¹⁰



Figure 3: Cucumber

ALOEVERA

Biological name: *Aloe barbadensis*

Family: Liliaceae

Aloe is an excellent example of such herbal extract. After centuries of use as an herbal remedy, it continues to be used for treating skin diseases even today. Aloe Vera is widely used in the cosmetic industry for its soothing, moisturizing and nourishing effects on the skin. Its bactericidal activity makes it useful for healing wounds and for treating skin infections such as psoriasis and acne. In acne treatment, the bactericidal activity of Aloe Vera is effective against both *P. acnes* and *S. epidermis*. Aloe Vera extracts have also been shown to have antifungal properties. Apart from skin infections, Aloe Vera can be used to treat inflammatory bodies on the skin such as boils and cysts.¹²

Aloe Vera can penetrate deep into the skin to kill off bacteria hiding in clogged skin pores. It can also form a protective layer over the skin to speed up the healing of acne lesions and the fading of acne scars. This herbal extract can also reduce the size of inflamed nodules and cysts and help relieve pain caused by the swelling. Aloe Vera also promotes the regeneration of skin cells and tissues. Aging, hormonal changes, and approaching adolescence often cause unsightly and embarrassing skin conditions that take the form of pimples, blemishes, pustules and reddened areas. These skin problems take their toll not only in emotional anxiety and distress but also in physical marring of the skin, sometimes associated with pain, in both juveniles and adults.¹³



Figure 4: Aloe vera

BEETROOT

Biological Name: *Beta vulgaris*

Family: Amaranthaceae

Beetroot (*Beta vulgaris*) belongs to Chenopodiaceae family and classified as an herbaceous biennial plant. It is a good source of natural color. The colors are of two types, the Synthetic color made by humans and the Natural color (pigments) is found in nature¹⁴. Vegetable and fruits are a good source of natural color. Nowadays people use synthetic color in food that is very harmful for health. Natural colors are gaining significant importance because of their health properties but high cost and low stability are the major limitations using natural colors in food products. Some commonly used natural colors are Anthrocyanin, Carmine, Carotinoid, and Betalain¹⁵.

In its root, the best (red beet, *Beta vulgaris subsp, Vulgaris conditiva*) contains a very intense red colorant which is commonly used as a natural color additive in the food industry and cosmetics and pharmaceutical products, representing the main commercial source of natural red food color¹⁶.

Beetroot is a good source of natural food colorant because it contains a significant amount of betalain pigment. Betalains are attracting increasing attention because of their use for coloring and their antioxidant and radical scavenging properties against certain oxidative stress-related disorders, anticancer, antiviral and antiparasitosis properties. The red color of the beet root comes from a mixture of yellow-orange and red –violet plant pigments called betalains. The principal pigment amongst them is the red-colored betanin¹⁷.



Figure 5: Beetroot

METHODOLOGY

Methods and materials

List of ingredients

Table no 1: List of ingredients

SL. NO.	MATERIAL	PROPERTY
01	Mango Butter	Anti inflammation
02	Extract of cucumber	Astringent
03	Extract of Aloe vera	Moisturizer
04	Shikakai	Foaming Agent
05	Cocoa Butter	Emollient
06	Stearic acid	Anti-inflammatory agent
07	Salt	Preservative
08	Cinnamon	Antiseptic
09	Glycerine	Humectant
10	SLS (Sodium lauryl sulphate)	Foaming Agent
11	Milk powder	Cleanser
12	Beet root powder	colorant
13	Charcoal	Colouring agent
14	Distilled water	Vehicle
15	Coconut oil	Anti-inflammatory
16	Pepper Mint oil	Perfume
17	Rose Oil	Perfume

Instruments and apparatus

Table no 2: Instruments and apparatus

SL. NO.	INSTRUMENTS
01	pH meter
02	Brooke field viscometer
03	Weighing balance
04	Stalagmometer
05	Hot air oven
06	Freezer

METHODS

Plant collection and authentication

The fresh seed of Mango (*Mangifera indica* Linn.), fruit of Cucumber (*Cucumis sativus* L.) was collected from local market of Bannerghatta, Bengaluru, Karnataka, India. The Mango seed and Cucumber was authenticated at the Central Ayurveda Research Institute (Central

Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Govt. of India), Bengaluru, Karnataka.

Preparation of extracts

Cucumber extraction:

The cucumber was peeled and sliced into small pieces and kept in a glass container glycerine was added to the container and kept the container closed for a few days. After a couple of days extract was strained by pouring the cucumber mixture through a sieve in to a clean jar.

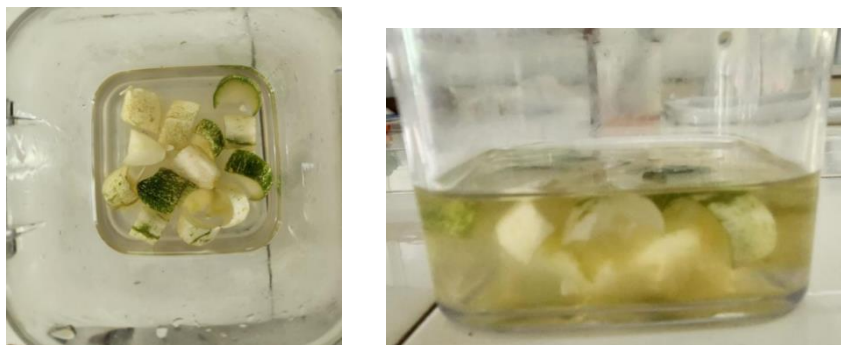


Figure 6: Cucumber extract

Aloe vera gel extraction

A standard sample of aloe vera gel was extracted by simple drain procedure, where 2-4 leaves of aloe were cut at about ½ inch from the base to drain out all the yellow sap material. The thinnest part of the top and remove the spines, the top and lower layers the white, clear fleshy parts was separated. The white flesh was blended with a mortar and pestle until there are no lumps.³



Figure 7: Aloe vera leaf and extracted gel.

Formulation of a Poly Herbal Shower Gel

Procedure for Formulation 1

- 1.5 gm of SLS was taken in a mortar and pestle and 10 ml of Glycerine was added to it.
- It was triturated well until the SLS was dissolved well.
- 10gm of Stearic acid was taken and added into a mortar and pestle.
- 5 gm of Cocoa butter was added to it.
- 1 ml of Peppermint oil and 1 ml of rose oil was added for pleasant odour.
- gm of salt was added for the preservative purpose.
- A sufficient quantity of water was added to it and it is triturated well until the ingredients which was added in the mortar and pestle get dissolved well.

Procedure for Formulation 2

- Fresh Aloe vera gel was taken.
- 75 ml of Aloe vera gel was triturated until it has good consistency.
- 2.5 gm of SLS was added into the mortar and pestle.
- Then 10 gm of Stearic acid was added into the mortar and pestle 0.5 g of cinnamon was added.
- 5 gm of Cocoa butter was added into the mortar and pestle.
- Then it was triturated well 2 gm of milk powder was added 2 gm of Charcoal was added as a colouring agent.
- 2 ml of Rose oil was added for preservative purpose.
- A sufficient quantity of water was added to it and it was triturated well until the ingredients which was added in a mortar and pestle get dissolved well.

Procedure for Formulation 3

- Fresh Aloe vera gel was prepared.
- 25 ml of aloe vera gel was triturated until it has a good consistency.
- 3 gm of Shikakai powder used instead of SLS was added to mortar and pestle and triturated well.
- 5 ml of Coconut oil was added into the mortar and pestle.
- 0.5 gm of cinnamon was added and 5 gm of Cocoa butter was added into mortar and pestle.
- 2 ml of Rose oil and 1 ml of Peppermint oil were added for pleasant odour and 2 gm of salt was added for preservative purpose.
- Sufficient quantity of water was added to it and it was triturated well until the ingredients which was added in a mortar and pestle get dissolved well.

Procedure for Formulation 4

- 3 gm of SLS was taken in a beaker then 5 gm of Mango butter was added and 2 gm Milk powder was added.
- Fresh Aloe vera leaf has been taken and the Aloe vera gel is extracted from the leaf.
- The Aloe vera gel has been taken in mortar and pestle and triturated and sufficient amount of distilled water has been added to get gel like consistency.
- The ingredients which were taken in the beaker is added into mortar and pestle which already contains Aloe vera gel and triturated well until the lumps are fully dissolved.
- 5 ml Cucumber extract was added to the mix then 5 ml Coconut oil added and 5 gm of salt has been added as preservative then triturated.
- Into this mix 2 ml of Rose oil was added for odour and 2 gm of Beetroot powder was added as a colouring agent.

• **Composition of a Poly Herbal Shower Gel**

Table No 3: Composition of Poly herbal shower gel

SL. NO.	MATERIAL	F1	F2	F3	F4
01	SLS	2.5gm	3gm	-----	3gm
02	Glycerine	10 ml	-----	-----	-----
03	Salt	2 gm	2 gm	2gm	2gm
04	Shikakai	-----	-----	3gm	-----
05	Stearic Acid	10 gm	10gm	-----	-----
06	Cocoa butter	5gm	5gm	5gm	-----
07	Mango Butter	-----	-----	-----	5gm
08	Cucumber extract	-----	-----	-----	2ml
09	Coconut Oil	-----	-----	5ml	5ml
10	Aloe vera	-----	25ml	25ml	25ml
11	Cinnamon	-----	0.5gm	0.5gm	0.5gm
12	Milk powder	-----	2gm	-----	2gm
13	Beetroot powder	-----	-----	-----	2gm
14	Charcoal	-----	2gm	-----	-----
15	Peppermint oil	1ml	-----	1ml	-----
16	Distilled Water	Qs	Qs	Qs	Qs
17	Rose Oil	2ml	2ml	2ml	2ml

Evaluation of a Poly herbal shower gel

The prepared shower gel was evaluated for various parameters as follows.

Physical appearance:

The physical appearance of the formulation was checked visually which comprised.

Colour:

The colour of the formulation was checked out against white background.

Odor:

The odor of the shower gel was analysed manually.

pH

An amount of 20 mg of the formulation was taken in a beaker and subjected to the pH measurement using a digital pH meter within 24 hrs of manufacture.

Viscosity:

Viscosities of formulated gels were determined using Brookfield viscometer at 25°C. The corresponding dial reading on the viscometer was noted. Viscosity of formulation was determined at 100 rpm, using spindle number 06.

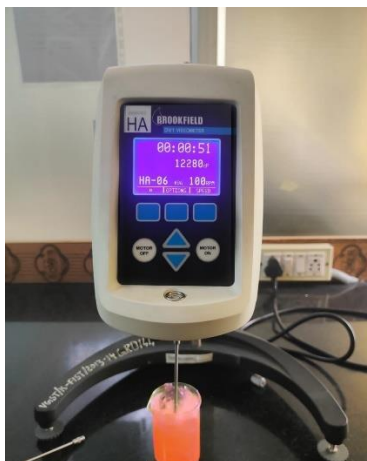


Figure 8: Viscometer

Spreadability

Spreadability denotes the extent of area to which the gel readily spread on application onto skin or the affected part. The bioavailability efficiency of a gel formulation also depends on its Spreading value. The spreadability is expressed in terms of time in seconds taken by two slides to slip off from the gel, placed in between the slides, under certain load. Lesser the time taken for separation of two slides, better the spreadability. Two sets of glass slides of standard dimensions were taken. The poly herbal gel formulation was placed over one of the slides. The other slide was placed on the top of the gel, such that the gel was sandwiched between the two slides in an area occupied by a distance of 6 cm along the slide. 100 gm weight was placed upon the upper slide so that the gel between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of the gel adhering to the slides was scrapped off. The two slides in position were fixed to stand without slightest disturbance & in such a way that only the upper slide slipped off freely by the force of weight tied to it. A 20gm weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 6 cm separated away from the lower slide under the influence of the weight was noted.

Spreadability was calculated by using the following formula.

$$S=M \times L / T$$

Where, S- Spreadability

M- Weight tied to the upper slide (20 gm).

L- Length of the glass (6.5 cm)

T-Time



Figure 9: Spreadability

Foaming test:

Approximately 1.0 gm of herbal soap was taken and dissolved in distilled water (about 50 ml) in a 100 ml graduated measuring cylinder to determine the soap's ability to produce foam. It was shaken for roughly 10 minutes in the measuring cylinder. After 10 minutes, the foam height was measured. The mean was calculated after recording the observations for five consecutive experiments.³¹



Figure 10: Foaming test

Foam retention test:

Approximately 1.0 gm of herbal soap was taken and dissolved in distilled water (about 50 ml) in a 100 ml graduated measuring cylinder to determine the soap's ability to produce foam. It was shaken for roughly 10 minutes in the measuring cycle. After 10 minutes, the foam height was measured. The mean was calculated after recording the observations for five consecutive experiments.³¹

Determination of percentage solid content:

Take four empty china dishes and pour each formulation in to the china dishes and record the initial weight (w_1) then keep in a water bath and heat until dried. Take the final weight (w_2) and calculate the percentage solid content using the equation.

$$\frac{w_1 - w_2}{w_1} \times 100$$

Where,

W1= Initial weight of sample

W2= Final weight after drying



Figure 11: Determination of percentage solid content

Stability test:

The Stability studies were carried out for Polyherbal shower gel formulation by storing at different temperature conditions like 40°C (hot air oven) 25°C (normal temperature) and 3-4°C (freezer) for 1 week. ³²



Figure 12: Stability test using Hot air oven (40°C)



Figure 13: Stability test at Room temperature (25°C)



Figure 14: Stability test using Freezer (3-4°C)

Cleaning Action:

5 gm. Wool was taken and placed in grease; the same was then placed in a 200 ml of water containing 1 gm of Polyherbal shower gel in a beaker and was shaken for 4 minutes. The solution was removed, and sample was taken out, dried and weighed. The amount of grease removed was calculated using the formula.

$$\text{Formula: } - D * P = 100(1 - T / C)$$

Where,

DP = Percentage of Detergency power

T = Weight of Formulated Preparation

C = Weight of Marketed Preparation

RESULT

Evaluation studies

Physical evaluation

Table No 4: Physical evaluation

Trial No:	Color	Odour
F1	White	Pleasant
F2	Black	Pleasant
F3	Brown	Pleasant
F4	Pink	Pleasant

pH test

Table No. 5: pH test

Formulation	pH
F1	5.9
F2	5.4
F3	6.4
F4	6.7

Viscosity

Table No. 6: Viscosity

Formulation	Viscosity(cps)
F1	4406.3
F2	4628.9
F3	5031.5
F4	5236.1

Spreadability

Table No 7: Spreadability

Formulation	Spreadability (Gm-cm/sec)
F1	11.5
F2	11.01
F3	10.7
F4	10.3

Foaming Test

Table No 8: Foaming test

Formulation	Avg. Foam Height
F1	62 cm
F2	74 cm
F3	55 cm
F4	80 cm

Percentage solid content test

Table No 9: Percentage solid content

Formulation	Percentage solid content
F1	68%
F2	61%
F3	55%
F4	77%

Cleaning action

Table No 10: Cleaning action

Formulation	Percentage cleaning power
F1	29%
F2	27.2%
F3	19%
F4	32%

DISCUSSION

1) Physical evaluation

The colour, odour, consistency, greasiness and state of the four formulations were checked in this test.

- All four formulations (F1,F2, F3, F4) had an elegant appearance.
- The odour and consistency were acceptable for all the four formulations.

2) pH

According to the results, the pH of all four formulations that F1, F2, F3 and F4 were found to be near to the skin pH of 5.5. So, it can be safely used on face. The pH of shower gel found to be in range of 5.5-5.9.

F4 is considered to be the best among other formulations because it shows pH approximately equal to skin pH.

3) Viscosity

Viscosity of shower gel was Brooke field viscometer at the room temperature. The viscosity

of all the formulations were tested using viscometer and it was found to be within the limits.

Viscosity of the formulation F4 was found to be higher than the other formulations.

4) Spreadability

Spreadability denotes the extent of area to which the gel readily spread on application to skin or the affected part. The bioavailability efficiency of a gel formulation also depends on its spreading value. The spreadability test showed that all the formulated shower gels have good spreadability property.

5) Foaming test

The formulations F1, F2, and F4 showed good foaming after continuous shaking where formulation F3 showed very low amount of foam. And formulation F4 gave more lather than the rest of the formulations.

It shows that F4 has more foam ability.

6) Foam retention test

After keeping aside for 10 min all formulations did not show any significant reduction in the foam height, so all the formulations have good foam retention property.

7) Determination of percentage solid content.

After calculation of percentage solid content it was found that formulation F4 has more solid content than other formulations (F1, F2, F3). So, F4 has more solid content when compared to other formulations.

8) Stability:

During the stability studies, no change in colour and no phase separation were observed in any of the formulations.

9) Cleaning Action:

From the result it is clear that the formulation F4 has more cleaning power.

CONCLUSION AND SUMMARY

“Formulation and evaluation of polyherbal shower gel” was carried out in this project to develop a new shower gel which may be a better alternative for existing shower gels prepared with more synthetic material and which may affect the natural tone of the skin. A poly herbal shower gel was well formulated using mango butter, cucumber extract, aloe vera, beetroot powder and other excipients with four different concentrations.

The formulations were evaluated for physical appearance, colour, odour, consistency, greasiness, pH of the formulation, viscosity and spread ability. The result obtained at each stage of the formulation were evaluated and F4 is selected as the best formulation.

From the present study, we finally selected that the F4 formulation of shower gel as the best formulation because of its good physical appearance, spreadability and foam ability. We concluded that the shower gel has satisfactory cleansing and softening property which is an alternative for existing shower gel prepared with more synthetic material which may affect the natural tone of the skin.

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