International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May–June 2025, pp: 547-565www.ijprajournal.com ISSN: 2456-4494

Formulation and Evaluation of Liquid Body Soap

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Abstract

Body wash is a liquid cleanser that is specifically formulated for use on the body. It helps to remove dirt, sweat, and impurities from the skin, leaving it feeling clean and refreshed. Body washes often come in a variety of scents and formulations to cater to different skin types and personal preferences.use of cosmetics is part of caring for the skin and other body parts due to the damaging effects of modern pollution and UV rays on human health; aloe plants produce a material used in cosmetic goods to treat burns, psoriasis, acne, and other skin disorders; preparation of herbal soap is a medication or therapy with therapeutic benefits for the skin, including antibacterial and antifungal qualities; the raw material used to make soap has a number of properties that make it a good medicinal or cosmetic. The plant used to manufacture soap has properties that can help eliminate acne, soften the skin's epidermis, increase penetration, and hasten healing and resolution.

I. INTRODUCTION -

The frequency of using body wash depends on individual factors such as skin type, activity level, and personal preference. Dermatologists suggest that showering, bathing, or cleansing with body wash should typically be done every two to three days, with adjustments based on factors like sweating from physical activities .It's important to note that showering too frequently can lead to skin dryness and disruption of the skin barrier, making the skin more prone to infections. On the other hand, showering too infrequently can lead to issues like body odor, acne, skin conditions like eczema and psoriasis, and an imbalance of good and bad bacteria on the skin. Ultimately, the frequency of using body wash should be tailored to individual needs, skin type, and lifestyle factors. It's recommended to strike a balance between maintaining good personal hygiene and avoiding over-washing that can strip the skin of essential oils and lead to skin problems.

The main benefits of using body wash include:

- **Gentle Cleansing:** Body wash is generally gentler on the skincompared to bar soap.
- **Moisturization:** Many body wash formulas contain moisturizing ingredients like oils, butters, or glycerin to help keep the skin hydrated.
- **Exfoliation:** Somebody washes contain gentle exfoliating agents like beads or scrubs to help remove dead skin cells and improve skin texture.
- **Fragrance:** Body washes are available in a wide variety of fragrances, allowing users to choose a scent they enjoy.
- **Convenience:** Body wash is easy to dispense and use, making it a convenient option for daily bathing.
- **Hygienic:** Body washes are more hygienic than bar soaps as they come in containers that can be sealed, reducing the risk of bacteria and germs breeding on the product.

1.1 HISTORY

Body Wash History

The history of body wash dates back thousands of years. Ancient civilizations like the Egyptians and Greeks used oils and natural ingredients to cleanse and moisturize their skin. However, modern liquid body wash as we know it today began to emerge in the mid-20th century with the development of synthetic detergents.

By the 1970s, body wash became popular due to its convenience and effectiveness in cleaning the skin. Since then, it has evolved with advancements in formulation, scent, and packaging. Body wash has a long and intriguing history, spanning millennia and cultures. While today we take our daily shower routines for granted, the evolution of body washes is a fascinating journey through time, culture, and technology.

- **Ancient Civilizations:** The origins of body wash can be traced back to ancient civilizations such as the Egyptians, Greeks, and Romans. These early cultures valued personal hygiene and developed rudimentary forms of soap by mixing animal fats, plant oils, and ashes. These early cleansers were used primarily for medicinal and ritualistic purposes rather than everyday bathing.

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- **Medieval Europe:** During the Middle Ages, bathing fell out of Favour in Europe due to religious beliefs and misconceptions about hygiene. However, in some regions, particularly in Islamic Spain and the Byzantine Empire, bathing remained an important part of daily life. Soap making techniques were refined during this time, with the introduction of ingredients like olive oil and lye.
- **Renaissance and Early Modern Era:** The Renaissance saw a resurgence of interest in personal hygiene and cleanliness. Soap-making became a specialized craft, with guilds established to regulate its production. In the 17th and 18th centuries, scented soaps gained popularity among the wealthy elite, who sought to mask body odors with fragrant perfumes and essential oils.
- **Industrial Revolution:** The Industrial Revolution brought significant advancements in soap production. The discovery of new cleaning agents, such as sodium hydroxide, enabled the mass production of soap on an unprecedented scale. Soap bars became more accessible to the general population, leading to widespread adoption of daily bathing habits.
- **20th Century:** The 20th century witnessed further innovations in the field of personal care products. Liquid soaps, initially developed for industrial use, were introduced to the consumer market in the 1940s. These early formulations were primarily utilitarian, designed for practicality rather than luxury.
- **Modern Era:** The late 20th and early 21st centuries saw a proliferation of body wash products catering to diverse consumer preferences. Advances in cosmetic chemistry led to the development of moisturizing formulas, pH-balanced cleansers, and antibacterial agents. Brands began marketing body washes as indulgent spa-like experiences, incorporating exotic ingredients and sophisticated fragrances.
- **Today:** In the contemporary era, body washes have become a staple in households worldwide. They come in a variety of formulations, including gels, creams, and foams, catering to different skin types and preferences. Natural and organic ingredients are increasingly sought after, reflecting growing consumer awareness of sustainability and health concerns.
- **The Future:** As technology continues to advance, the future of body wash holds exciting possibilities. Innovations such as personalized formulations tailored to individual skin needs, eco-friendly packaging solutions, and sensorial experiences enhanced by virtual reality are on the horizon. Whatever the future holds, one thing is certain: the journey of body wash through history is a testament to humanity's enduring quest for cleanliness and self-care.

1.2 TYPES OF BODY WASH

- **Moisturizing:** Contains ingredients like oils or shea butter to hydrate the skin. Moisturizing body washes are designed to cleanse and hydrate the skin simultaneously. They typically contain ingredients like glycerin, shea butter, or natural oils to help replenish moisture and maintain skin's hydration levels. Look for ones without harsh chemicals or sulphates if you have sensitive skin. Always patch test new products to ensure compatibility with your skin type.
- **Exfoliating:** Contains particles like sugar or salt to remove dead skin cells and reveal smoother skin. Exfoliating body washes typically contain small particles or chemicals like alpha hydroxy acids (AHAs) or beta hydroxy acids (BHAs) that help remove dead skin cells, leaving your skin feeling smoother and looking brighter. They can be especially beneficial for areas prone to roughness, like elbows, knees, and feet. Just be sure not to overdo it, as excessive exfoliation can irritate the skin.
- **Antibacterial:** Formulated to kill bacteria and prevent body odour Antibacterial body washes contain ingredients like triclosan or triclocarban that help kill bacteria on the skin. However, their long-term use may lead to antibiotic resistance and disrupt the skin's natural microbiome. It's essential to use them sparingly and consult with a healthcare professional if you have concerns.
- **Fragrance-free:** Suitable for sensitive skin or those sensitive to scents.
- **Natural/Organic:** Made with natural ingredients and free from synthetic chemicals. Natural body washes are typically made from plant-based ingredients and avoid harsh chemicals like sulfates, parabens, and synthetic fragrances. They often contain natural oils, such as coconut oil or olive oil, for moisturizing properties, and botanical extracts for added benefits like soothing or refreshing the skin.

1.3ADVANTAGE

The advantages of using body wash over traditional bar soap include:

- **Moisturizing Properties:** Body washes often contain moisturizing agents that help hydrate the skin, especially beneficial for dry or sensitive skin.

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- **Exfoliation:** Body washes aid in exfoliating the skin, removing dead skin cells, and unclogging pores, which can be particularly helpful for acne-prone skin.
- **Hygienic:** Body washes are more hygienic than bar soaps as they come in containers that can be sealed, reducing the risk of bacteria and germs breeding on the product.
- **Aromatherapy Benefits:** Many body washes offer various scents that can provide aromatherapy benefits, such as soothing essential oils that enhance the washing experience.
- **Travel-Friendly:** Body washes are convenient for travel as they are often available in travel-sized bottles, making them easy to pack and carry around.

These benefits collectively make body wash a popular and effective choice for personal hygiene routines, offering advantages in terms of moisturization, exfoliation, hygiene, aromatherapy, and convenience for travelers.

1.4 SKIN

The skin is an important and complex organ that performs many essential functions of the human body. It is the largest organ in the body, with a surface area of about 16,000 cm2 and accounting for about 8% of the total body mass. The skin has a multi-layered structure consisting of epidermis, dermis and hypodermis.

The epidermis is the outermost layer and acts as a protective barrier to prevent the entry of harmful pathogens, chemicals and excessive water loss. It contains special cells called keratinocytes that produce keratin, a strong protein that helps maintain the structural integrity of the skin. The epidermis also contains melanocytes, which produce the pigment melanin, which gives the skin its colour and helps protect against UV radiation.

Dermis, a layer of connective tissue that gives the skin strength, flexibility and support. It contains blood vessels, lymphatic vessels, sweat glands and hair follicles, all of which play an important role in the functioning of the skin. The dermis is further divided into the papillary region, which contains loose connective tissue, and the reticular region, which consists of dense connective tissue.

The hypodermis, the deepest layer of the skin, consists mainly of fatty tissue. This layer provides the body with insulation, cushioning and energy storage.

The skin performs many important functions, including:

1. **Protection:** The skin acts as a physical and chemical barrier that protects the body from environmental threats such as UV radiation, pathogens, and harmful chemicals.
2. **Thermoregulation:** The skin helps regulate body temperature through sweating and the dilation and contraction of blood vessels.
3. **Sensation:** The skin contains a network of nerve endings that allow us to sense touch, temperature and pain.
4. **Vitamin D synthesis:** The skin synthesizes vitamin D when exposed to sunlight, which is essential for bone health and other physiological processes.
5. **Immune function:** The skin contains special immune cells, such as Langerhans cells, that help protect the body against infections and other threats.
6. **Wound healing:** thanks to the regenerative properties of the connective tissue of the epidermis and dermis, the skin has a remarkable ability to repair itself when damaged.
7. **Appearance and social interaction:** Skin appearance, including its colour, texture, and hair distribution, plays an important role in personal identity and social interaction.

1.5 STRUCTURE OF SKIN

The skin is the largest organ of the human body and acts as a protective barrier against the external environment. It consists of three main layers: epidermis, dermis and hypodermis.

The epidermis is the outermost layer of the skin and consists of densely packed epithelial cells. It is further divided into five sublayers: stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum and stratum germinativum. The epidermis does not contain blood vessels and is vascular. Skin color is determined by melanin, a pigment produced by melanocytes in the epidermis.

The dermis lies below the epidermis and consists of two layers: the papillary region and the reticular region. The papillary region contains loose connective tissue with finger-like projections called papillae that extend into the epidermis. The network consists of dense, irregular connective tissue with blood vessels, hair follicles, sweat glands and other structures.

The hypodermis, also known as the subcutaneous layer, is the deepest layer of the skin

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and consists mainly of loose connective and fatty tissue. It acts as an insulator, softens the body and anchors the skin to the subcutaneous tissues.

The skin contains various accessories, including hair, nails, and glands. Hair follicles are found in the dermis and extend into the subcutaneous tissue. The skin also contains sebaceous glands that produce sebum to lubricate and retain water in the hair and skin. Sweat glands, which help regulate body temperature, are found in both the dermis and the epidermis.

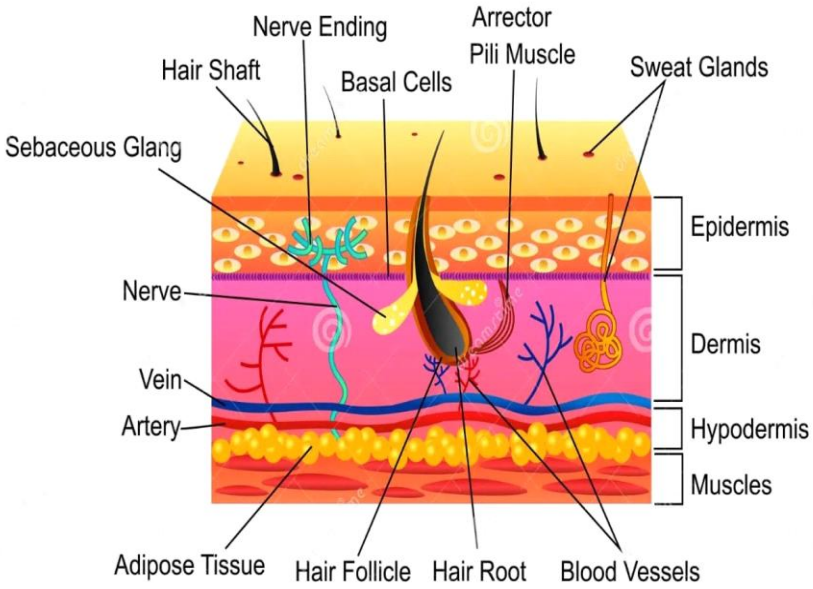

Fig. 1 Structure of Skin

The skin has multilayer structure consisting of three main layers.

1.6 Epidermis:

The epidermis is the outermost layer of the skin, responsible for protecting the body, maintaining hydration, producing new skin cells, and determining skin colour. the epidermis is avascular and primarily made of keratinized, stratified squamous epithelium. It varies in thickness across the body, with thicker areas like the palms and soles having a stratum lucidum layer. The epidermis constantly renews itself, with cells moving from the basal layer to the surface, where they form a protective barrier. Melanocytes in the epidermis produce melanin, determining skin colour. Common conditions affecting the epidermis include melanoma and sunburns. Regular care, such as hydration, a healthy diet, and sunscreen use, is crucial for maintaining skin health and protecting the epidermis from damage. It consists of multiple layers of flattened cells over a base layer, with a thickness ranging from 31.2µm to 596.6µm. The epidermis is primarily composed of keratinocytes, melanocytes, Langerhans cells, Merkel cells, and other cellular components.

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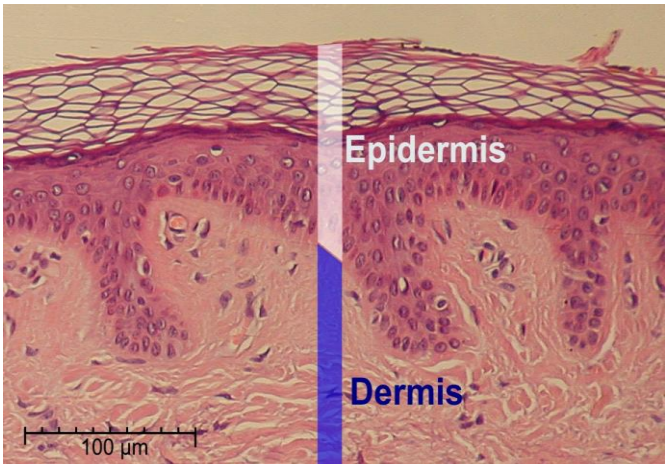

Fig. 2 Structure of Epidermis & Dermis

Epidermis Consist of Several Layers, Including

1. Stratum corneum: The stratum corneum is the outermost layer of the epidermis, which acts as a protective barrier for the skin. Composed mainly of dead skin cells called corneocytes, it prevents water from evaporating and protects the body from external factors such as pathogens and UV rays. This layer is constantly renewed by a process called desquamation, in which old cells are discarded and replaced by new ones from the layers below. Its integrity is critical to maintaining skin health, and disruptions can lead to conditions such as dryness, irritation, and increased susceptibility to infection.

2. Stratum Lucidum: The lucidum is a thin, translucent epidermal layer found only in the thick skin of hairless areas such as the hands and soles of the feet. It is located superficially in the granulosum and deep in the stratum corneum. It consists of flattened dead cells and is characterized by the absence of nuclei and organelles. These cells contain a protein called eleidin, which is responsible for the transparency of the layer. The stratum lucidum plays a vital role in protecting the skin, providing additional protection against external threats such as pathogens and UV radiation. It also helps maintain skin moisture and elasticity.

3. Stratum Granulosum: The stratum granulosum is a crucial layer of the epidermis, the outermost layer of the skin. Between the spinosum and the stratum lucidum (if present), it usually consists of three to five layers of flattened cells. These cells undergo a process called keratinization, in which they produce keratin, a tough fibrous protein that provides structural integrity to the skin. This layer functions as a transition between the metabolically active cells of the deeper layers of the epidermis and the dead, fully keratinized cells of the outer layer, the stratum corneum. In short, the granulosum plays an important role in the protective function of the skin, preserving moisture and protecting the body from environmental stresses.

4.Stratum Spinosum: Stratum spinosum, also known as stratum pineus or spinous cell layer, is an important part of the outer layer of the skin, the epidermis. It lies above the basal layer and below the granulosum and plays a key role in maintaining the integrity and function of the skin. The stratum spinosum consists of several layers of polygonal cells and acts as a transition zone between the basal layer of the epidermis and the upper layers. These cells are connected by desmosomes, which give the skin strength and elasticity.

5. Stratum Basale: The basal layer, also known as the basal cell layer, is the innermost layer of the epidermis, the outer layer of the skin. It consists mainly of basal cells, which are constantly dividing and pushing older cells to the surface of the skin. This layer is crucial for the regeneration and maintenance of the epidermis. Basal cells also give birth to keratinocytes, the most important cells of the epidermis, which produce keratin protein, giving the skin strength and water resistance. Basic are melanocytes that produce the pigment melanin, which is responsible for skin colour and protects against UV radiation. In addition, this layer contains Merkel cells, which act as touch receptors, which are closely related to sensory nerve endings and help in the perception of touch. This layer is critical to skin integrity and repair, as it provides structural support and facilitates the exchange of nutrients between the epidermis and dermis.

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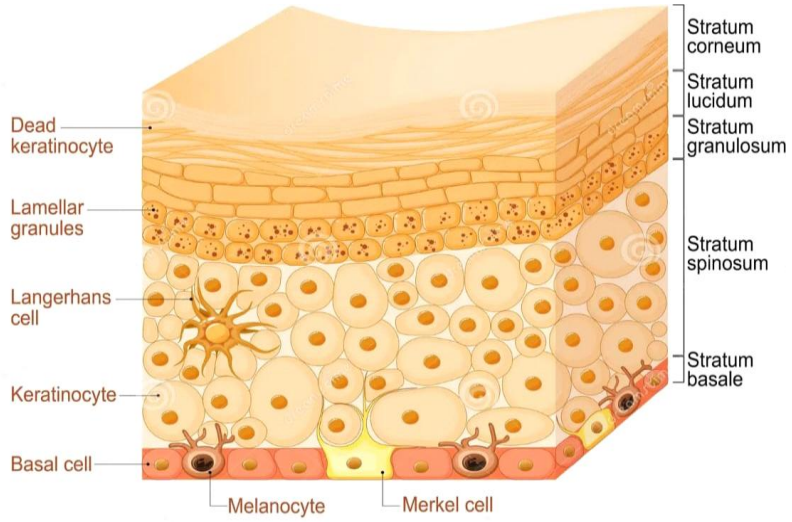

Fig. 3 Structure of Epidermis

1.7 Dermis

The dermis is an important layer of the skin, located between the epidermis and the subcutaneous tissues, and is mainly composed of dense, irregular connective tissue. It consists of two main layers: the papillary layer and the reticular layer. The papillary layer is adjacent to the epidermis, while the reticular layer is deeper and thicker.

The dermis contains various structures such as blood vessels, nerves, hair follicles, sweat glands, sebaceous glands and more. It plays an important role in supporting and strengthening the skin, thermoregulation, sensation, collagen synthesis and energy conservation.

The dermis is rich in collagen, elastin and extrafibrillar matrix, which gives the skin strength, elasticity and support. In addition, it contains fibroblasts, macrophages and mast cells, which are essential for maintaining skin health. The retina, the lower layer of the dermis, is characterized by dense collagen fibers and is home to structures such as hair roots, sweat glands and blood vessels.

The dermis is important for protecting the body, regulating temperature and providing sensory functions. Proper skin care, including hydration, nutrition, cleansing and sun protection, is critical to maintaining healthy skin function and overall skin health.

1.8 HYPODERMIS

The hypodermis, also known as subcutaneous layer or subcutaneous, is the deepest skin layer that lies below the dermis and above the underlying fascia, muscle and bone. It serves as the body's cushion and energy store and plays an important role in thermoregulation, insulating the body from temperature extremes. The hypodermis consists mainly of loose connective tissue and adipose tissue (fat cells). Connective tissue contains collagen and elastin fibers that anchor the skin deep into the fascia and connect it to the dermis. Adipose tissue is organized into blocks separated by connective tissue and serves as the main fat storage site in the body.

II. MATERIAL AND METHOD -

5.1 PLANT PROFILE

Papaya

Fig. 4 Papaya leaves

Botanical Name – Carica papaya

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Family – Caricaceae
Chemical Constituents - The main chemical constituents of Papaya leaves are: Carpaine, Pseudocarpaine, Dehydrocarpaine, Papain, Quercetin, Kaempferol.

Uses -

- Papaya leaves can be used to treat wounds, cuts, and abrasions due to their anti-bacterial properties.
- Papaya leaves can be used to prevent infections in burns, surgical wounds, and other types of wounds.
- Papaya leaves can be used to treat acne due to their anti-bacterial properties, which help to reduce the growth of bacteria that cause acne.
- Papaya leaves have been used to treat herpes, a viral disease that causes skin lesions.

Aloe Vera

Fig. 5 Aloe vera

Botanical Name – Aloe barbadensis Miller
Family – Asphodelaceae
Chemical Constituents - The main chemical constituents of Papaya leaves are: Aloe-emodin, Aloin, Barbaloin, Aloctin A, Aloctin B, Vitamin A, Vitamin C, Vitamin E.

Uses -

- Aloe vera gel is used to soothe skin irritations, burns, wounds, and eczema.
- Aloe vera has antimicrobial properties, which make it effective in preventing the growth of bacteria, viruses, and fungi.
- Aloe vera is used to accelerate wound healing, reduce scarring, and promote tissue repair.
- Aloe vera gel contains compounds like aloin and aloe-emodin, which absorb UV radiation and protect the skin from damage.
- Aloe vera gel can help hydrate the skin, keeping it moist and supple.
- Aloe vera gel has been shown to protect the skin from gamma radiation, which can cause damage and increase the risk of skin cancer.

Turmeric

Fig. 6 Turmeric

Botanical Name – Curcuma longa
Family – Zingiberaceae
Chemical Constituents - The main chemical constituents of Turmeric are: Curcumin.

Uses -

- Turmeric's anti-inflammatory properties can help to reduce redness and inflammation in the skin.
- Turmeric's antioxidant properties can help to protect the skin from damage caused by free radicals.
- Turmeric can help to brighten and even out skin tone.
- Turmeric's antibacterial and anti-inflammatory properties can help to treat acne and reduce scarring.
- Turmeric can help to soothe and calm irritated skin.
- Turmeric's antimicrobial properties can help to prevent the growth of bacteria and other microorganisms in the soap.

5.2 INGREDIENTS LIST -

S.no	Ingredients name	Uses
1	Aqua	It can help hydrate and nourish the skin, replenishing essential minerals

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		lost during daily activities.
2	Carbopol 934	1. It is commonly used as a thickening agent in body wash formulations. 2. Carbopol 934 can help. stabilize other ingredients in the body wash.
3	Sodium lauryl ethyl sulphate	Helping to create lather and remove dirt and oil from the skin.
4	Sodium hydroxide	It helps to adjust the pH of the product to make it more compatible with the skin's natural pH.
5	Ethelene glycol monostearate	1. It is commonly used in body washes as an emulsifier and thickening agent. 2. It helps to stabilize the mixture of water and oils in the product, ensuring a smooth and consistent texture.
6	Ethylenediaminetetraacetic acid	Used in cleaners, detergents, fertilizers, fixer solution for color film development, water treatment, and as a pH modifier.
7	Propylene glycol	Utilized to dilute and stabilize medicines.
8	Activated charcoal	1. Unclogging Pores 2. Cleansing and Detoxifying 3. Freshening and Cooling
9	Salicylic acid	used to treat a range of skin conditions such as acne, warts, psoriasis, calluses,
10	Turmeric	provide glow and luster to the skin.
11	Aloe vera gel	helps with a protective layer for the skin, and it also helps to retain moisture.
12	Papaya (Carica papaya)	Antimicrobial property
13	Perfume	Fragrance Enhancement

Table No. – 1 Ingredients

5.3 Glasswares and Equipements:

S. no.	Glasswares and Equipment's.
1	Beaker
2	Conical flask
3	Test tube
4	Heating Mantle
5	Water bath
6	Glass Rod

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7	Funnel
8	Tripod stand
9	Spatula
10	Container (plastic bottle)

Table No. 2 - Glasswares and Equipment

5.4 Ingredients quantity -

S. no.	Name of Ingredients	Quantity taken (gm)
1	Aqua	Q.S.
2	Carbopol 934	0.4
3	Sodium lauryl ethyl sulphate liquid	50
4	Ethylenediaminetetraacetic acid	0.1
5	Sodium hydroxide	Q.S.
6	Ethelene glycol monostearate	1.5
7	Propylene glycol	2
8	Activated Charcoal	0.3
9	Salicylic acid	0.5
10	Turmeric	0.1
11	Aloe vera gel	0.1
12	Papaya leaves	0.1
13	Perfume	Q.S.

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Table No. – 3 Quantity of Ingredients

5.5 Extraction of Papaya leaves-
Materials Needed-
- Fresh or dried papaya leaves
- Solvent (ethanol, methanol, water, etc.)
- Glassware (beakers, flasks, etc.)
- Filter paper
- Cheesecloth or a coffee filter

Solvent Extraction Method-
1. Collect fresh or dried papaya leaves and clean them thoroughly.
2. Chop the leaves into small pieces and dry them completely.
3. Weigh the dried leaves and calculate the amount of solvent needed (typically 1:10 ratio).
4. Place the dried leaves in a glass container and add the solvent.
5. Stir the mixture and let it steep for 2-3 hours or overnight.
6. Filter the mixture using filter paper or cheesecloth.
7. Collect the filtrate and discard the solids.
8. Evaporate the solvent using a rotary evaporator or by leaving it in a fume hood.
9. Collect the resulting extract and store it in an airtight container.

III. EXPERIMENTAL WORK -

6.1 Preparation of Body Soap -

Phase 1: -

Take 20gm distilled water + 0.1gm Di. EDTA + 0.4 gm Carbopol 934 and heat up to 75° C till it dissolves properly.

Phase 2: -

15gm distilled water +1.5gm Ethelene glycol monostearate +50gm Sodium lauryl ethyl sulphate slowly heat up to 75° C

Phase 3: -

0.3gm Activated charcoal +2gm propylene glycol +0.1 turmeric extract + papaya leaves extract 0.1 + aloe vera gel mix it at room temperature.

Phase 4: -

9 gm distilled water + 0.5 gm salicylic acid mix it at room temperature.

6.2 Procedure -

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Take a beaker of 250ml.
Add phase 1 and phase 2 in beaker and heat it up to 75° C
Add phase 3and phase 4 in different beaker and mix them at room temp.
Add both solution at room temperature. Stir it properly.
Final product

IV. EVALUTION TEST -

7.1 pH test: - The pH was resolved using a computerized pH meter. The cathode was submerged in the body wash solution for ten minutes prior to getting the perusing at surrounding temperature. Note down the perusing of pH meter.

Fig. 7 Determination of pH

7.2 Viscosity Test - viscosity is measured using an Ostwald viscometer. The amount of time needed for the liquid to flow by gravity between marks A

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and B inside the capillary tube is found. The test liquid's flow time is compared to the amount of time needed for a known-viscosity liquid and an unknown-viscosity liquid.

Fig. 8 Determination of viscosity

7.3 Skin Irritation Test - Body washes were tested for skin compatibility and irritation by applying them to a panel of volunteers. No signs of irritation or sensitization was observed.

Fig. 8 Skin Irritation Test

7.4 Foam Height Test: The foam height and stability of a body wash is tested by dispersing a sample in water, agitating it, and measuring the foam volume over time. Good foaming ability and stability are desirable properties.

Fig. 9 Foam Height Test

V. RESULT AND DISCUSSION -

Following evaluation parameters were performed. To ensure superiority of prepared body wash.

8.1 Morphological Evaluation - The body wash was analyzed for morphological characteristics as shown in (table 4). The color of the sentence was black. The smell of prepared formulations was pleasant and acceptable, which is desirable to cosmetic formulations. As per the requirements of cosmetic formulations, texture and thickness were acceptable.

S.no.	Parameter	Observation
1	Colour	black
2	Odour	pleasant
3	Appearance	viscous
4	Thickness	thick

Table No. – 4 Morphological Evaluation

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8.2 Physicochemical Evaluation - The body wash was tested for physicochemical properties in (table 5). The formula's ph was found to be near to neutral. The Free alkali content is low, ideally 0.1%, avoid skin irritation and dryness. The foam height and viscosity parameters were within the recommended range.

S.no.	Parameter	Observation
1	pH	6.3
2	Alkali content	0.1%
3	Foam height	Between the range
4	viscosity	Between the range

Table No. – 5 Physicochemical Evaluation

8.3 Irritancy Test - The results of the irritancy test are shown in (table 6). During irritancy tests, the formulation showed no irritation, redness, or swelling. This formula is safe to use on the skin.

S.no.	Parameter	Observation
1	Irritation	No
2	Redness	No
3	Swelling	No

Table No. – 6 Irritancy Test

8.4 Stability Studies - The results of stability are shown in (table 7). At the mentioned pH levels, no difference in colour, odour, and thickness was observed. The stability tests revealed no change in the formulation.

S.no.	Parameter	Room temperature	40°C
1	pH	6.3	6.3
2	Colour	Black	No change
3	Odour	Pleasant	No change
4	Thickness	Thick	No change

Table No. – 7 Stability Studies

VI. SUMMARY & CONCLUSION -

Body wash formulation is a complex process that requires a thorough understanding of the roles and interactions of the various ingredients. The goal is to create a product that cleans the skin effectively, offers a pleasant sensory experience and responds to different skin types and concerns. When evaluating body wash products, the most important physicochemical parameters are humidity (usually 5-15%), pH (slightly acidic or neutral, usually 6-8), total amount of fatty substances (59-91%), free alkali (preferably below

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(0.1%) and total alkali content (0.98-1.60%). The ideal foam height can vary according to the composition and the user's preference. Formulators must follow methodical processes, adapt to changing trends and consumer preferences, and strive to develop high-quality customized body washes that meet different skin types and requirements. Navigating cosmetic regulations, creating a distinctive brand identity and constant innovation are critical to a successful body wash business.

REFFERENCES -

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