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Formulation and Evaluation of Body Wash

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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. They are typically used in the shower or bath by lathering the product onto a wash cloth or sponge and then applying it to the body. It's a great way to start or end your day feeling clean and rejuvenated! Body wash is a popular cleansing product that is specifically designed for use on the body. It comes in the form of a liquid, usually packaged in bottles or containers, and is used during showers or baths. The primary purpose of body wash is to cleanse the skin by removing dirt, sweat, and impurities, leaving it feeling clean and refreshed. One of the main advantages of using body wash is its convenience. Unlike traditional bar soaps, body wash is in liquid form, making it easier to apply and lather onto the skin. It can be used with a washcloth, loofah, or even just your hands, allowing for a more thorough and effective cleansing experience. Body washes come in a wide range of scents, formulations, and textures to cater to different skin types and personal preferences. Some body washes are specifically formulated for sensitive skin, while others may contain moisturizing ingredients to help hydrate and nourish the skin. The variety of options available ensures that everyone can find a body wash that suits their needs. In addition to cleansing, many body washes also offer additional benefits. Some contain exfoliating ingredients, such as gentle scrub particles or chemical exfoliants, which help to remove dead skin cells and promote a smoother, more radiant complexion. Others may contain ingredients like vitamins, antioxidants, or essential oils, which can provide additional nourishment and skincare benefits .Using body wash is a simple process. Just wet your body with water, dispense a small amount of body wash onto your hands or a washcloth, and lather it onto your skin, focusing on areas that need extra attention. Rinse thoroughly with water to remove any residue, and voila! You're left with clean, refreshed skin. Body washes are not only effective for cleansing the body but can also be a sensory delight. The wide array of scents, ranging from floral and fruity to fresh and invigorating, can transform your shower or bath into a luxurious and aromatic experience. The pleasant fragrance can linger on your skin, leaving you feeling refreshed and smelling great throughout the day. It's important to note that while body wash is generally safe for most people to use, it's always a good idea to check the ingredients and choose a product that suits your skin type and any specific concerns you may have. If you have any allergies or sensitivities, it's best to opt for fragrance-free or hypoallergenic options.***

Keywords: cleanser, lathering, rejuvenated, exfoliating ingredients, nourishment, invigorating, hypoallergenic.

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(1). 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:

1) *Gentle Cleansing:* Body wash is generally more gentle on the skin compared to bar soap, which can sometimes be drying or irritating.
2) *Moisturization:* Many body wash formulas contain moisturizing ingredients like oils, butters, or glycerine to help keep the skin hydrated.
3) *Exfoliation:* Some body washes contain gentle exfoliating agents like beads or scrubs to help remove dead skin cells and improve skin texture.

4) *Fragrance:* Body washes are available in a wide variety of fragrances, allowing users to choose a scent they enjoy.
5) *Convenience:* Body wash is easy to dispense and use, making it a convenient option for daily bathing(2).

II. HISTORY

A. 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(3).

B. 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.

C. 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(4).

D. 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.

E. 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(5).

F. 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.

G. 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(6).

H. 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.

I. 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(7).

III. TYPES OF BODY WASH

1) *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 glycerine , 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(8).
2) *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.
3) *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(9).
4) *Fragrance-free*: Suitable for sensitive skin or those sensitive to scents.
5) *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. When choosing a natural body wash, look for certifications like USDA Organic or Ecocert, and read ingredient lists to ensure they align with your preferences and skin sensitivities(10).

IV. ADVANTAGE

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

1) *Moisturizing Properties*: Body washes often contain moisturizing agents that help hydrate the skin, especially beneficial for dry or sensitive skin.
2) *Exfoliation*: Body washes aid in exfoliating the skin, removing dead skin cells, and unclogging pores, which can be particularly helpful for acne-prone skin.
3) *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.
4) *Aromatherapy Benefits*: Many body washes offer various scents that can provide aromatherapy benefits, such as soothing essential oils that enhance the washing experience.
5) *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 travellers(11) .

V. CAUSE AND SYMPTOMS

A. Causes

Allergic reaction to ingredients in the body wash, such as fragrances, preservatives, or surfactants
Irritation from the chemicals or cleansing agents in the body wash, especially for those with sensitive skin
Bacterial contamination from using shared applicators like loofahs or washcloths that are not properly cleaned.
Body wash typically refers to a product used for bathing, rather than a medical condition. However, if you're referring to a skin reaction or irritation caused by a body wash, symptoms may include redness, itching, dryness, or even rash. Causes could vary, such as sensitivity to certain ingredients, excessive use, or using a product not suitable for your skin type(12).

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VI. SYMPTOMS

Skin irritation, redness, itching, hives or rash
Skin blisters, scaling or swelling
Difficulty breathing, tightness in the chest or throat, wheezing
Gastrointestinal symptoms such as nausea, vomiting or diarrhea , if the body is red after accidental ingestion. Possible more serious symptoms such as low blood pressure or heart rate disturbances in severe poisoning(13).

VII. 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.
Beneath the epidermis is the 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(14).
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(15).
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.

In conclusion, the skin is a remarkable organ that performs many important functions, from protecting the body to facilitating social interaction. Our understanding of the complexity of skin is constantly growing, and new therapeutic and cosmetic applications are being developed to improve human health and well-being(16).

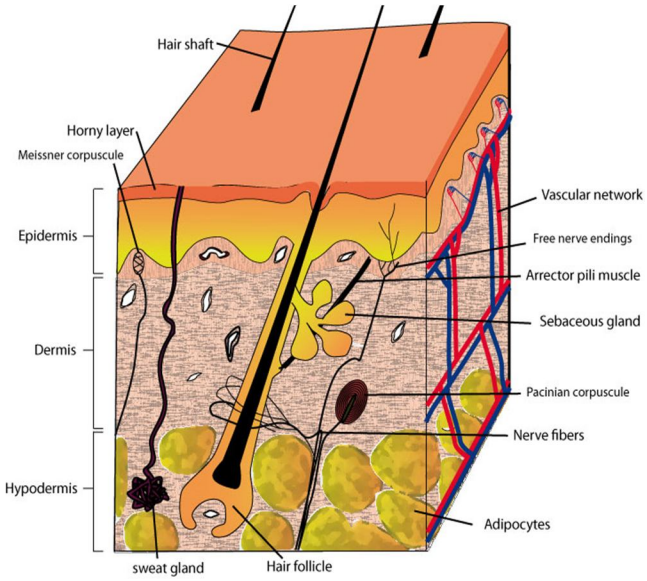
VIII. STRUCTURE OF SKIN

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 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(17).



(18)

The skin performs several important functions, including:

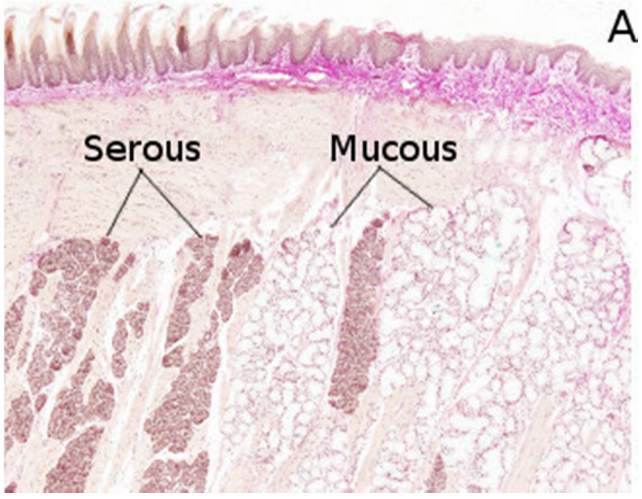
Protection: The skin acts as a barrier against harmful environmental factors such as UV radiation, chemicals and pathogens.

Temperature regulation: sweat glands help cool the body, while blood vessels help distribute heat.

Sensation: The skin has nerve endings that allow us to feel touch, pressure, temperature and pain.

Vitamin D synthesis: The skin synthesizes vitamin D when exposed to sunlight.

Excretion: The skin excretes waste products such as urea and lactic acid though sweat.

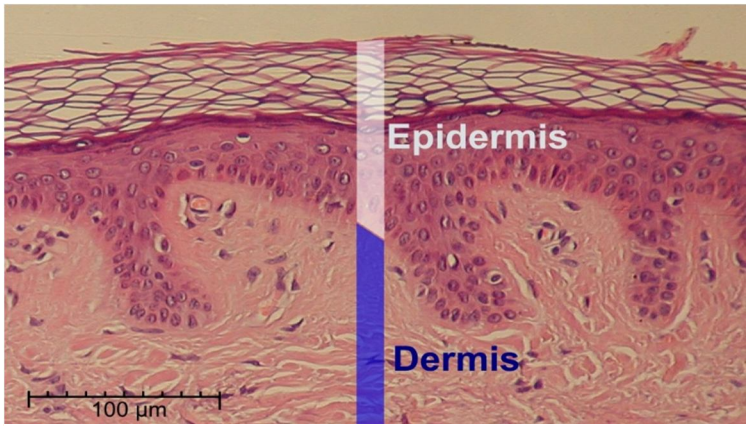


(19)

The skin has multilayer structure consisting of three main layers.

A. 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. Composed of five layers, including the stratum basale, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum, 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. The epidermis is the outermost layer of the skin, providing a barrier to infection and regulating water loss. 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. The layers of the epidermis include the stratum basale, stratum spinosum, stratum granulosum, stratum lucidum (in thick skin), and stratum corneum. The epidermis plays a crucial role in protecting the body, regulating water loss, and producing new skin cells.



(20)

B. 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, which are embedded in lipids, 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. Proper skin care helps support skin functions.

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 elidin , 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. Although thin, it contributes significantly to the overall integrity of the epidermis and ensures skin elasticity and functionality. Dysfunction or damage to the stratum lucidum can lead to a variety of skin conditions, including infections and impaired barrier function. Understanding its structure and function is essential for effective diagnosis and treatment of skin diseases.

3) Stratum Granulosum

The stratum granulosum is a crucial layer of the epidermis, the outermost layer of the skin. Between the pinosum 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. As cells ascend through the granulosum, they begin to lose their nuclei and other organelles, accumulating keratohyaline granules and lipid-filled lamellar bodies. These granules play a role in the aggregation of keratin filaments, which contributes to the formation of a strong, impenetrable protective layer on the skin. In addition, lipid-filled lamellae release lipids that help the skin seal in water, prevent excessive water loss, and protect against external pathogens and irritants. 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. One notable feature of Kihikih is the spines called desmosomes or spiny cells, which contribute to its name. These protrusions facilitate adhesion between adjacent cells, reinforcing the structural integrity of the epidermis .In addition, the stratum spinosum actively participates in the process of keratinization, where the cells are gradually filled with keratin protein and flatten more and more, moving to the surface of the skin. This process ensures that the skin forms a protective barrier against external pathogens, chemicals and physical damage .In general, spinosum is essential to maintain the strength, elasticity and protective function of the skin, which protects the body from various environmental stressors and pathogens..

5) Stratum Basale

The basal layer, also known as the basal layer or 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. The basal layer lies on top of the basement membrane, which separates the epidermis from the underlying dermis. 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. In general, basic plays an important role in maintaining the function, integrity and sensitivity of the skin(21).

6) 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. The dermis is an important layer of skin that lies between the epidermis and the subcutaneous tissue. It consists of two main layers: the papillary layer and the reticular layer.

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The papillary layer is the superficial layer rich in loose connective tissue and vascular structures, while the reticular layer is deeper and consists of dense connective tissue with collagen and elastic fiber's.

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

The dermis consists mainly of fibroblasts, macrophages and mast cells, as well as collagen and elastin fiber's , which give the skin strength and elasticity.

It also contains an extracellular matrix with glycosaminoglycans, proteoglycans and glycoproteins. The dermis has mechanoreceptors for touch and thermoreceptors for sensing heat. In addition, it participates in hair growth, sweat production and nourishes skin cells through blood vessels.

The thickness of the dermis varies in different parts of the body and is the thinnest over the eyelids and the thickest on the back. Diseases affecting the dermis can manifest in many different ways, such as changes in the structure, colour or feel of the skin. Treatment for skin conditions may include medications, lifestyle changes, or medical procedures, depending on the specific problem.

Maintaining healthy skin is essential for overall skin health. Drinking plenty of water, proper wound care and sun protection are key factors in skin care. The functions of the dermis in protecting the body, supporting the epidermis, producing sensation and sweat emphasize its importance in maintaining the integrity and general well-being of the skin(22).

IX. 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.

The hypodermis has several important functions:

Connects the dermis to the underlying tissues: The connective tissue of the hypodermis connects the dermal layer to the muscles and bones, allowing the skin to move smoothly over the underlying tissues.

Provides cushion and shock absorption: hypodermic fat acts as a cushion that protects organs, muscles and bones against physical impacts.

Stores energy: hypodermal adipose tissue produces fat cells to store energy.

Regulates body temperature: hypodermic fat insulates the body from the cold and helps regulate heat by producing sweat.

In addition to connective and fatty tissue, the hypodermis also contains blood vessels, nerves, sweat glands, hair follicles, lymphatic vessels, macrophages (white blood cells) and a bursa.

The thickness of the hypodermis varies in different parts of the body and depends on factors such as age, sex and general constitution. Men tend to accumulate fat in different places (neck, arms, lower back and abdomen) than women (breasts, hips, thighs and buttocks).

The hypodermis is not actually part of the skin, although the boundary between the hypodermis and the dermis can be difficult to distinguish

It originates from the mesoderm, while the dermis originates from the dermatome region of the mesoderm.

In some animals, such as whales and hibernating mammals, the epidermis forms an important insulating layer and/or food supply. In plants, the hypodermis is a layer of cells just below the leaf epidermis, which is often mechanically reinforced for protection or water retention.

The hypodermis is an important layer of skin that fulfill's several functions such as cushion, insulation and energy storage. Its composition and thickness varies from body to body and can be affected by factors such as age, gender and general body composition(23).

X. INGREDIENTS LIST

Serial no.	Ingredients name	Uses
1)	Aqua	1)It can help hydrate and nourish the skin, replenishing essential minerals lost during daily activities.
2)	Carbopol 934	1)It is commonly used as a thickening agent in body wash formulations. 2) primary purpose is to increase the viscosity of the body wash. 3) Carbopol 934 can help stabilize other ingredients in the body wash
3)	Sodium lauryl ethyl sulphate	1) Sodium lauryl ethyl sulphate (SLES) is commonly used in body washes as a surfactant 2)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, ensuring it's gentle and non-irritating.
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)	Ethylenediamine tetraacetic acid .	• 1) 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 in different forms, including oral drugs, topical medications, and intravenous drugs
8)	Activated charcoal	1) Unclogging Pores 2) Cleansing and Detoxifying 3) Freshening and Cooling
9)	Salicylic acid	1) Salicylic acid is commonly used to treat a range of skin conditions such as acne, warts, psoriasis, calluses, corns, dandruff, and ichthyosis
10)	Turmeric	provide glow and luster to the skin.
11)	Aloe vera gel	Aloe vera gel helps with a protective layer for the skin, and it also helps to retain moisture.
12)	Perfume	1)Fragrance Enhancement 2)Branding and Marketing

Table no.1 (24)

XI. EXPERIMENTAL WORK.

A. *Formula*

Serial no.	Name of Ingredients	Quantity taken (gm)
1	Aqua	Q.S
2	Carbopol 934	0.4
3	SLES Liquid	50
4	Ethylenediamine tetraacetic 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	Perfume	

Table no.2 (25)

B. *Preparation of Body Wash*

Phase 1:-

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

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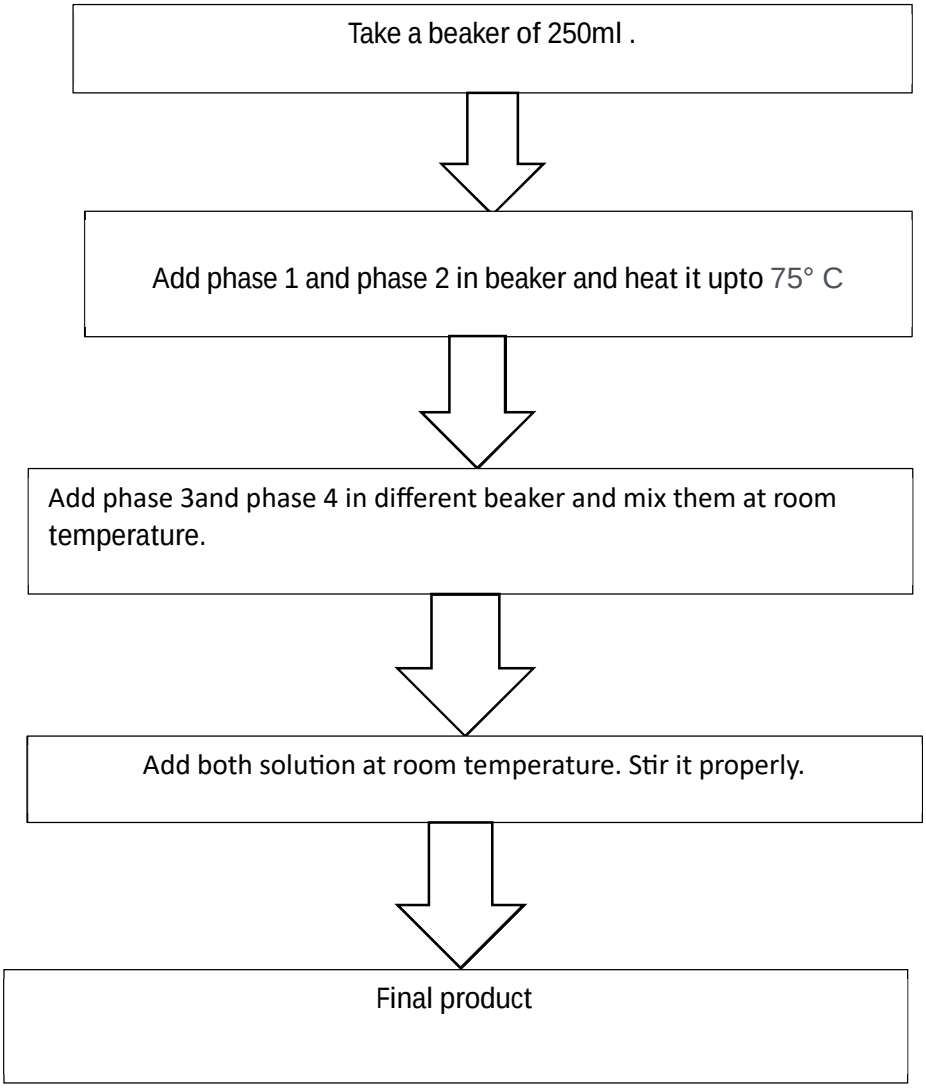
C. Procedure



XII. EVALUTION TEST

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.

pH reading:- 7.50

2) *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.

Sp= vt/vo ,100%

where: Sp – foam stability [%],
Vt – foam volume after time t = 10 minutes [cm3],
V0 – foam volume after time t = 1 minute [cm3]. (28)

3) *Dirt Dispersion And Cleaning Test*

The ability of a body wash to remove dirt and microbes can be evaluated by a thumb impression test. Thumbs exposed to the environment are pressed onto agar plates before and after washing with the test product. Reduced microbial growth on the washed thumb print indicates good cleaning efficacy(29).

4) *Skin Irritation Test*

Body washes was tested for skin compatibility and irritation by applying them to a panel of volunteers.No signs of irritation or sensitization was observed.


(30)

5) *Viscosity Test*

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

6) Procedure

The viscometer was placed on an appropriate pedestal and fixed vertically. The viscometer was filled with water up to mark A. Water flowed from mark A to mark B in a timed manner. The same process was carried out with the test liquid, and its viscosity can be calculated using the formula below.[10]

η1 can be determine using following equation.

$$\eta 1 = \int 1 t1 / \int 2 t2 \text{ X } \eta 2$$

∫1=Density of unknown liquid
t1 =Time of flow of unknown liquid
∫2 =Density of standard liquid
t2 =Time of flow of standard liquid
η2=Viscosity of standard liquid(31).

XIII. RESULT AND DISCUSSION

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

A. Morphological Evaluation

The body wash was analysed for morphological characteristics as shown in (table 3). 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.

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

Table no.3 (32)

B. Physicochemical Evaluation

The body wash was tested for physicochemical properties in(table 4). 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.

Sr.no	Parameter	Observation
1	pH	7.5
2	Alkali content	0.1%
3	Foam height	Between the range
4	viscosity	Between the range

Table no.4 (33)

C. Irritancy Test

The results of the irritancy test are shown in (table 5). During irritancy tests, the formulation showed no irritation, redness, or swelling. This formula is safe to use on the skin.

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

Table no.5 (34)

D. Stability Studies

The results of stability are shown in (table 6). At the mentioned pH levels, no difference in colour, odour, and thickness was observed. The stability tests revealed no change in the formulation.

Sr.no	Parameter	Room temperature	40°C
1	pH	7.5	7.5
2	Colour	Black	No change
3	Odour	Pleasant	No change
4	Thickness	Thick	No change

Table no.6 (35)

XIV. 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 0.1). %) and total alkali content (0.98-1.60%)(36). 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(37).

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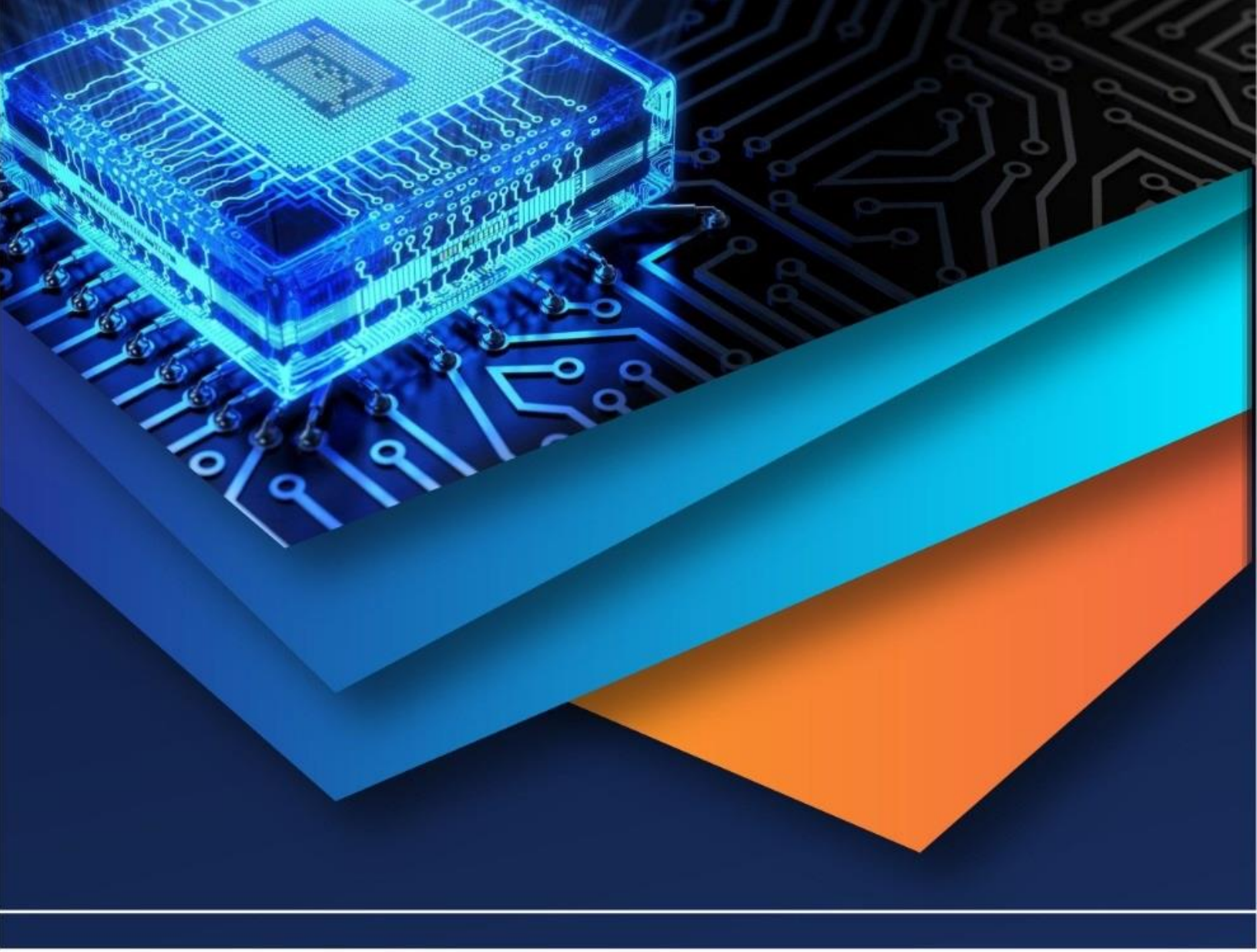

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