



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

Formulation And Evaluation of Anti-Acne Face Wash Enriched with Natural Goodness

Maithili Shinde*, Karishma Vhanwad

Dr. Shivajirao Kadam College of Pharmacy, Kasabe Digraj 416416.

ARTICLE INFO

Published: 12 Dec. 2024

Keywords:

Herbal Facewash, Butea monosperma, Palash, Neem Facewash, Facewash.

DOI:

10.5281/zenodo.14407061

ABSTRACT

Cosmetics play a vital role in enhancing and maintaining skin, hair, and nails health and appearance. This study focuses on the formulation of an herbal-derived face wash utilizing extracts from Butea Monosperma (Palash), Aloe Vera, and Neem, renowned for their antimicrobial, antioxidant, and anti-inflammatory properties. The face wash was formulated with various ingredients such as gelling agents, preservatives, foaming agents, and humectants to enhance its efficacy and stability. The antimicrobial activity of the face wash was evaluated against Staphylococcus aureus and Propionibacterium acnes using the agar well diffusion method. Results showed significant inhibition of bacterial growth compared to standard antibiotics, indicating the potential of the herbal-derived face wash in combating acne and maintaining skin health. Additionally, the formulation's viscosity, pH, Formability, and Spreadability were assessed to ensure its suitability for use. Overall, the study highlights the development of a natural, effective, and safe cosmetic product with promising antimicrobial and anti-acne properties, offering a sustainable alternative for skincare routines. Formulation of the face wash involves the incorporation of these extracts along with other ingredients like Carbopol 940, methyl Paraben, propylene glycol, and sodium lauryl sulfate to achieve desired properties such as gelling, preservation, and foaming. The procedure is meticulously described, emphasizing the importance of pH adjustment for optimal performance. In conclusion, the formulated face wash enriched with Butea monosperma, Aloe vera, and Neem extracts offers a promising skincare solution, providing both cleansing and therapeutic benefits.

INTRODUCTION

Cosmetic word is origination from Greek word “kosmetieos” mean adorn and preparation.

Cosmetics are external preparation meant for to apply on external part of the body i.e., nail, skin, softing, cleaning , covering , preservation ,

***Corresponding Author:** Maithili Shinde

Address: Dr. Shivajirao Kadam College of Pharmacy, Kasabe Digraj 416416.

Email ✉: maitushinde2002@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



removal and protection etc. cosmetic substance help in improving or changing the outward show of body and also clean and make the odour of body. According to Indian Regulation Defined as “As per the Drug and cosmetic act 1940, “cosmetic” means any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into, or otherwise applicated to, the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance, and includes any article. With the use of cleansers, toners, serums, moisturizers, and balms, skin care products can be used to protect, cleanse, and refresh the skin; cosmetics intended for more general personal care, including shampoo and body wash, can be used to cleanse the body; cosmetics intended to improve one's appearance (makeup) can be used to add color to a person's face, enhance natural features (like eyebrows and eyelashes), conceal imperfections, and, in the case of more extreme forms of makeup used for runway shows, performances, and people wearing costumes, completely alter the appearance of the face to resemble a different person, creature, or object. It is also possible to create fragrance-enhancing cosmetics.(2) Cosmetic classified according to their use, function, composition/physical nature, and according to region (body part) where it is used, they broadly categorized into four type they are follow;

- Skin care cosmetic
- Hair care cosmetic
- Nail care cosmetic
- Cosmetic for hygiene purpose

Skin Care product: Skin care cosmetics encompass a broad range of products designed to promote the health and appearance of the skin. From cleansers to moisturizers, serums to masks, the world of skin care is vast and ever-evolving. Here are some key points to consider:

- **Cleansing:** Proper cleansing is the foundation of any skin care routine. Cleansers remove dirt,

oil, and impurities, helping to prevent breakouts and maintain clear pores. It's essential to choose a cleanser suited to your skin type—whether oily, dry, combination, or sensitive to ensure effective yet gentle cleansing.

- **Moisturizing:** Moisturizers hydrate the skin, replenishing moisture lost throughout the day and creating a protective barrier against environmental stressors. Ingredients such as hyaluronic acid, glycerin, and ceramides help to lock in moisture and maintain skin's suppleness. Selecting a moisturizer tailored to your skin's needs can address concerns such as dryness, aging, or oiliness.
- **Treatment Products:** Serums, essences, and ampoules are concentrated formulations designed to target specific skin concerns, such as wrinkles, dark spots, or acne. These products often contain potent active ingredients like vitamin C, retinol, or niacinamide, which can provide noticeable results with consistent use. Incorporating targeted treatments into your routine can address individual skin care goals and concerns effectively.
- **Sun Protection:** Protecting the skin from harmful UV radiation is essential for maintaining its health and preventing premature aging and skin damage. Sunscreens with broad-spectrum SPF shield against both UVA and UVB rays, reducing the risk of sunburn, wrinkles, and skin cancer. Daily application of sunscreen, even on cloudy days, is crucial for maintaining youthful and healthy-looking skin.
- **Specialized Care:** In addition to daily maintenance, skin care cosmetics may include specialized products for specific concerns, such as exfoliates for smoother texture, masks for deep cleansing or hydration, and eye creams for targeting fine lines and dark circles.



Integrating these products into your routine as needed can address unique skin care needs and enhance overall results.

- Routine and Consistency: Consistency is key to achieving optimal results with skin care cosmetics. Establishing a regular routine tailored to your skin type and concerns can help maintain skin health and address specific issues over time. Pay attention to how your skin responds to different products and adjust your routine as needed to achieve the best possible outcomes.

Face Wash:

Products that cleanse the face without drying it out are called face washes. Another term for face wash is "cleanser." All skin types were found to benefit similarly from face wash products. Face wash works wonders to moisturize dry skin and remove oil and debris from the skin. You can clean your face with cleansers and face washes to get rid of debris, oil, and other pollutants. Grunge and extra oil makeup are removed from your face by using a cleanser. These contaminants are soluble in oil. Although it might not be 100% successful, face washing can also be used to eliminate them. The sensitive skin of the face is prone to moisture loss from regular soaps. A face wash is a gentle cleanser that fulfills the important tasks of keeping skin clear, smooth, and fresh while also moisturizing the horny layer of the skin without being too harsh on it. So that skin seems vibrant and youthful. Providing cleansing, anti-wrinkle, anti-acne, moisturizing, and fairness to the skin could be the goals of face wash. Skin whitening products are thought to work by limiting melanocytes' ability to produce melanin, thereby Lowering the amount of melanin present in the skin and affecting its metabolism. Although they are less harmful to melanocytes, ingredients that prevent the synthesis of melanin—like propanediol, arbutin, kojic acid, Evodia rutaecarpa

fruit extract, and vitamin C and its derivatives are used in whitening cosmetics.(3)

Forms of face wash:

- a. Gel based face wash
 - b. Cream based face wash
 - c. Foam based face wash
- Gel based face wash: Gel face washes typically have a gel-like consistency and are transparent. For
 - people with oily, sensitive, or acne-prone skin, they are excellent cleansers. They feed your skin from the inside out while also assisting with thorough cleaning and clearing congested pores.
 - Foam based face wash : Foam cleansers are a deal breaker when it comes to face wash varieties. They are
 - a fantastic option for people with mixed skin types because they fall somewhere between cream and gel cleansers. They could start out looking like cream or gel and then suddenly transform into a thick, foamy texture. Foam face washes remove excess oil, dust, dirt, and other pollutants, leaving your skin feeling revitalized and clean.
 - Cream based face wash : Like gel cleansers, cream cleansers are practically exactly what they sound like very creamy and opulent in texture. Cream cleansers are better than other cleansers for skin types that are sensitive or dry because they are usually gentler and more hydrating. They are made to deeply clean and hydrate your skin in equal measure. Because of their more dense and potent nature, they work well on all skin types especially dry, older skin in the winter. They can also be used to remove makeup.4

Facewash for different skin type:

- a. Oily skin facewash
- b. Dry skin facewash
- c. Normal skin facewash



As the area of our body most vulnerable to infections, our skin needs protection from skin conditions, particularly those brought on by bacteria that cause acne. The most prevalent skin condition that 85% of today's youngsters deal with is acne. They primarily affect the face and neck, which have the greatest oil glands, and they may persist until adulthood. Seborrhea, inflammatory lesions, comedones, excessive sebum production, and the presence of bacteria like *Propionibacterium acnes*, *Staphylococcus epidermidis*, and *Malassezia furfur* in the follicles are the common characteristics of acne. It is therefore possible to target these microbes in the hopes of treating acne. (5)

Benefit of face wash:

- Efficient Cleaning.
- Helps in balancing pH of skin.
- Enhanced skin texture.
- Improves skin hydration.
- Acne reduction.
- Makeup removal.
- Helps in skin treatment.
- Glowing Skin.

While using herbs and natural basic medications can have advantages, it's crucial to speak with medical specialists and use them appropriately for safe and efficient results.

This disclosure is about topical drug delivery applications with moisturizing and antibacterial properties. More specifically, the current disclosure concerns facewash made using *Butea Monosperma* flowers and other authorized pharmaceutical excipients.(7) *Butea monosperma* (Lam.) is a plant that grows widely in India and is widely utilized in traditional medicine. It also known as flame of the forest, is wild, medium sized tree found throughout the deciduous forests and also in open areas.(8) According to a contemporary pharmacological investigation, the plant has been utilized to treat a wide range of illnesses. When examined in vitro, methanol

extract of *Butea monosperma* (Lam.) seeds demonstrated strong anthelmintic, anticonvulsive, hepatoprotective, antiestrogenic potential, antifertility, anti-diarrheal, and antifungal properties. (9) The leaves have antibacterial activities, while the root bark has aphrodisiac, analgesic, and antihelmintic properties, beneficial in the treatment of helminthiasis, tumors, piles, ulcers, and night blindness (10). Rabbits' eyes show reduced inflammation when exposed to the leaves of *Butea monosperma*. It is also useful in treating skin infections including boils, blisters, and pus or carbuncles. It moreover provides defence against external ultraviolet A and UVB radiation from the sun, together with contaminants. Rat's exhibit wound healing qualities when exposed to *Butea monosperma* alcohol bark extract. Antioxidant properties are responsible for this therapeutic effect. Antifungal properties are found in petroleum and ethyl acetate extracts of Palash (*Butea monosperma*) stem and bark. It is utilized to treat fungal skin infections and acts as a natural antifungal agent. It's also a component in cosmetic product development. Medicarpin is the active ingredient that possesses antifungal properties. Skin Repair and Protection: *Butea monosperma* ability to heal wounds makes it a useful ingredient in cosmetics meant to aid in skin restoration. It may also shield the skin from allergens and pollutants in the environment, which makes it beneficial in skin care formulation. It is noted that although *Butea monosperma* may have advantages in cosmetic applications, more study and testing is necessary to determine the safety and effectiveness of using it in particular formulations. Before using products containing *Butea monosperma* extract, anyone with skin sensitivities or allergies should use caution and conduct patch tests, just like with other cosmetic product. (10) *Butea monosperma* flower has antioxidant activity, which beneficial in skin infection, has reported a anti-inflammatory

activity. *B. monosperma* flowers contain butin, butein, butrin, isobutrin, palasitrin, coreipsin, isocoreipsin, chalcones, and aurones (8). Butrin (7, 30, 40-trihydroxy-avanone-7, 30-diglucoside) and isobutrin (3,4, 20, 40-tetra-hydroxy-chalcone-3, 40-diglucoside). (11)

The flower extract's phytoconstituents, butrin, isobutrin, and isocoreopsin, were found to have inhibitory activity against the expression of inflammatory genes; rutin, an isolated phytochemical found in the extract, was reported to have antioxidant activity; the flower's methanolic extract and its isolated phytochemicals, butrin and isobutrin, were reported to have antidiabetic, hepatoprotective, and anti-inflammatory properties.(12)

Monographs of Herbs:

1) Palash:



Figure 1. Palash

- Synonyms : flame of forest, flame of the forest, forest flame , dhak, palash, and bastard teak.
- Family Name: *Fabaceae (Leguminosae)*
- Biological source: Palash consists of dried seed, fruit, leaves and flowers of *Butea monosperma* Lam.
- Chemical constituent: phytoconstituents such as alkaloids, flavonoids, phenolic compounds, amino acids, glycosides, steroids etc. The pharmacological activity is mainly shown by flowers, seeds, barks, fruits, leaves etc. mainly contains contain butin, butein, butrin, isobutrin, palasitrin, coreipsin, isocoreipsin, chalcones, and aurones.

- Use: Antimicrobial, antiinflammemetry, antioxidant, dried extract used as a chemical dye (orange), antifungal, aphrodisiac, analgesic, and antihelminthic properties.

2) Aloes:



Figure 2. Aloe

- Synonyms: aloe, musabbar, kumari
- Family: *Liliaceae*
- Biological source: Aloe dried juice obtained by transversely cut leaves of various species of *Aloe barbedenri*, *aloe perribaker*
- Chemical constituent: the most important constituents of Aloes are the three isomers of Aloins, Barbaloin, β -barboloin and Isobarbaloin, which constitute the so-called 'crystalline' Aloin, present in the drug at from 10 to 30%. Other constituents are amor-phous Aloin, resin, emodin and Aloe-emodin.
- Use: antibacterial and antioxidant, healing of wounds ,diabetes, anticancer effect, skin protection hair protection, emollient, moisturizing to the skin, etc.

3)Neem:



Figure 2.Neem

- Synonyms: Hin.-Nira, nimb; Mal. – Veppa; Mar. – Limba, Oriya- Nimba; Tam- Vembu.
- Family: *Meliaceae*
- Biological source: Neem consists of the fresh or dried leaves and seed oil of *Azadirachta indica* J. Juss (*Melia Indica* or *M. azadirachta* Linn.)
- Chemical constituent: Nimbin, 6-desacetylnimbinene, Nimbinene, Nimbandiol, nimbolide, Quercetin, β -sitosterol, Ascorbic acid, n-hexacosanol, nonacosane and amino acid. Nimbin & Nimbidinin
- Use: skin conditions, infected burns, and septic sores. It is also advised to apply the leaves as poultices or decoctions for eczema, boils, and ulcers. Skin conditions like ringworm, indolent ulcers, and scrofula are treated with the oil.(13)

Review of Literature:

Shailendra S. Gurav et.al 2008

Gum of *Butea monosperma* is used to treat microbial and fungal infections in folk medicine. To validate this use, the in- vitro antimicrobial activity of petroleum ether and alcoholic extract of *Butea monosperma* gum was evaluated against various microbial strains such as *Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus cereus*, *Salmonella typhimurium*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Candida albicans* and *Saccharomyces cerevisiae* by using disc diffusion method. Minimum inhibitory concentration (MIC) was determined by agar dilution technique. Both extracts showed significant inhibition against erence gram positive bacteria and fungal strains. MIC value of petroleum ether extract against gram positive and fungal strains was 300 μg / ml and that of alcoholic extract was 200 μg / ml. Neither extract showed inhibitions against gram negative bacteria.

Kruti Dave et.al.2019

All parts of the plant, from root to fruit, consisting of a multitude of secondary metabolites which impart an unprecedented variety of medicinal uses

to the plant. Studies have shown the presence of different phytochemical constituents in botanical sample responsible for the antimicrobial activity. These antimicrobial agents should be beneficial to host cells and toxic to pathogenic microbes. Hence, the antibacterial activity was examined from the leaf and flower of *Butea monosperma*. Sample was collected and its crude extract was obtained by using methanol, acetone and water as the extraction solvent. These extract were tested against some pathogenic microorganisms like *Staphylococcus aureus*, *Bacillus cereus* and *B. subtilis*. The extract of *Butea monosperma* showed antibacterial activity against *Staphylococcus aureus*, *Bacillus cereus* and *B. subtilis*. Bio-chemical test for the presence of phytochemicals have shown positive result and these phytochemicals have ability to fight against microorganisms or inhibit the growth of microorganisms.

Pallavi T. Madavi et.al.2023

Herbal formulations have enlarging demand in the world market as a source of food, cosmetics, and medicinal purposes. The aim of this study is to formulate and evaluate the herbal face wash gel. There are three forms of herbal face wash i.e., gel, cream and liquid-based face wash. We have studied on gel-based herbal face wash. Ingredients required in this formulation are extracted by the hydro alcoholic extraction method. Turmeric (*Curcuma longa*), Aloe Vera (*Aloe barbadense* Linn), Lemon (*Citrus Limon*) source of vitamin C, Neem (*Azadirachta indica*) are very helpful and do not have any side effects. All herbal ingredients are easily available in the surrounding area.

Isabelle Krolkiewicz-Renimel et.al:2013

Author explain the antimicrobial activity of *butea monosperma*, In vitro anti-inflammatory mechanism of a hydroethanolic extract of *B. monosperma* flowers (BME) and more specifically of an enriched fraction in butrin and isobutrin (BI) was studied using cell culture of Normal Human



Keratinocyte, cells involved in the skin inflammatory.

Jignasu P Mehta et.al2011:

The root and flowers of *Butea monosperma* (Lam.) were extracted with methanol. Extensive chromatographic separation and purification with the organic solvents was done. Four phytochemicals were separated and their structures were established based on various spectroscopic techniques. Isolated crude extract was subjected for antibacterial activity against gram-negative and gram-positive bacteria like *Bacillus megatarium*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonas aeruginosa* using standard protocols with MIC (Bacterial) in range of 7.5 to 25 µg/ml. The antifungal activity was also carried out against strains of *Alternaria*, *Fusarium* and *Aspergillus flavus* within the range between 10 µg/ml to 300 µg/ml MIC (Fungal). The results of antibacterial activity were compared with a standard antibiotic disc of ciprofloxacin and norfloxacin (5 to 30 µg/disc) against the same microbial strains. The results of antifungal activity were compared with nystatin (100 to 200 µg/disc) against the same microbial strains

MATERIAL AND METHOD:

Plant material:

Flowers of *butea monosperm* was collected from local region of sangli, district Maharashtra, India. The natural habitats of *Butea monosperma* (Lam.) include tropical Southern Asia, Bangladesh, Nepal, Sri Lanka, India, western Indonesia, and Burma, Thailand, Laos, Cambodia, and Vietnam. Apart from arid regions, it can be found all over India up to a height of 1250 meters. Aloe and neem also collected from local region of Sangli.

Preparation of extractions:

1) extraction of palash:

5gm of dried flowers of *butea monosperm* (palash) were extracted in a 20ml of methanol at 50°C for 1hr under continuous stirring. Extract then filter out with the help of whatman filter paper, then

filtration cake was wash with 95% ethanol solution. Both filtrate stored at 4°C

2) Extraction of neem:

3gm of dried leaves of neem extracted in 20 ml of water at 50°C with double boiling method, filter with whatman filter paper, then collected filtrate concentrated.

3) Extraction of aloe :

Aloe vera gel is the mucilaginous jelly obtained from parenchyma cells of the Aloe vera plant. Aloe vera leaves are crushed, grinded, filtered and stabilised to get aloe gel.

Identification test for methanolic extract of palash:

1) Test for Alkaloids (Wagner's Test): -

To 2-3 mL of methanolic extract of *butea monosperma* filtrate, 1 mL of dil. HCL along with Wagner's Reagent is added which produces Reddish Brown precipitate.

2) Test for Alkaloids (Dragendroff's Test): -

To 3 mL methanolic extract of *butea Monosperma*, few drops of Dragendroff's reagent is added which produced orange brown colour

3) Test for Tannins: -

To 5mL methanolic extract of *butea Monosperma*, 0.2mL of 5% FeCl₃ solution is added which not produces greenish black precipitate.

4) Test for Terpenoids: -

To the test tube containing 2mL Chloroform, 0.5 mL methanolic extract of *butea Monosperma* and 3 mL conc. H₂SO₄ is added which forms Reddish-Brown layer



Figure 3. Show chemical Test of Palash

Formulation of facewash:**Table 1. Formula of Face wash**

Sr. no.	Name of ingredient	Quantity for 50ml	Use
1	Extract of palash	0.5 gm	Antimicrobial
2	Extract of aloe	0.5gm	Antioxidant
3	Extract of neem	0.5gm	Anti-inflammetroy
4	Carbapol 940	0.25%	Gelling agent
5	Methyl paraben	1%	preservetive
6	triethanolamine	q.s	Neutrizer
7	Propylene glycol	1ml	humectant
8	Sodium lauryl sulphate	1gm	Foaming aagent
9	Bentonite	0.0015	Anti-static agent
10	Distilled water	q.s	vehicle
11	Lavender oil	q.s	Flavouring agent

Procedure:

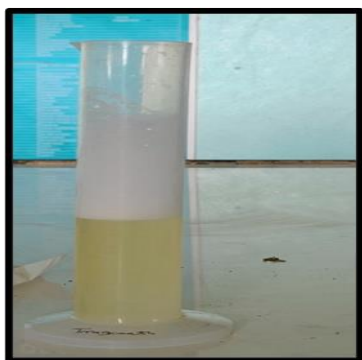
Mixture A: Take a extract of 0.5gm of neem, 0.5gm of palash, 0.5gm aloe in a one beaker, add methyl paraben sodium lauryl Sulphate+bentonite+propylene glycol in given quantise, mix well and add 5ml of water Mixture B: take 0.25% carbapol940 in other beaker with small quantise of water then with the help of double heat method melt the 0.25% carbapol after melting add remaining water. After then add mixture B into mixture A with stirring, then adjust the pH with help of triethanolamine by adding 2-3 drops in mixture.

Evolution Test:

1) **Colour:** The Colour of face wash formulation checked visually, it has orange colour.

2) **pH :** pH of formulation is 6.8.

3) **Fomability:** 1ml of formulation taken in a water containing cylinder, initial value is noted then shackd upto 10 min , note down final value.

**Fig 5- Shoe Fomability**

4) **Spreadability:** Easy To Spread.

5) **Skin Irritation:** Formulation applied to skin, after applied, it doesn't cause irritation.

6) **Washability:** Product Was Applied On Hand And Wash Under Running Water.

**Figure 4. Show washability**

6) **Antimicrobial activity:**

The antibacterial activity is estimated by comparing the inhibition of growth of sensitive micro-organisms produced by known concentration of the isolated substance or extract or synthetic compound to be examined against a reference substance.

Method of Analysis:

Two general method usually employed; One is the cup-plate method (Agar well diffusion method)-The agar cup plate method depends upon diffusion of the antibiotic from a vertical agar [CUP] Cylinder through a solidified agar layer on a Petri

dish. Sterile. Agar inoculated by suspension of the microbial inoculum. Then a hole with diameter of 6 to 8 mm is punched aseptically with a sterile cork borer or a tip, and then of the antimicrobial solution at desired concentration is introduced into the well. Then, agar plates are incubated under suitable conditions depending upon the test microorganism. The antimicrobial agent diffuses in the agar medium and inhibits the growth of the microbial strain entirely in a zone around the cylinder containing a solution of the substance to be tested.

Preparation of sample:

Sample directly used as 100 µl and 200µl in well.

Test organism:

Staphylococcus aureus Slant

Stock solution of *staphylococcus aureus* :

Streak a loopful of *Staphylococcus aureus* on, two slants of pre incubated Nutrient agar. Incubate the slants at 30-35°C for 24 hours in an incubator

Plate preparation for analysis:

After the suspension is prepared, use each 2 ml of culture suspension of *S. aureus* is to inoculate separately in 200 ml of sterile molten and cooled medium at 40°C - 45°C Antibiotic Assay Medium. 15-20 ml of Sterilized agar medium is poured into a sterile Petri plate with the help of sterile measuring cylinder give a depth of 3 to 4 mm. Allow to cool at room temperature by placing the dishes or plates on a level surface. Keep plates in refrigerator for 15 to 20 minute for hardening. Ensure that the layers of medium are uniform in thickness. Make 4-5 agar cups on each plate using 8-10 mm SS borer. Label the plates for sample,

standard and negative control samples and analysis details.

Analysis:

The volume of solution added to each cylinder or cavity must be uniform and sufficient most to fill the holes when these are used. Add 100 µl Img/ml = Solution B to agar cup labeled for each compound ID labeled on plate. Add 100 µl base to agar cup labeled as N (Negative). Leave the dishes or plates standing for 15-20 min. at 2-8°C or as appropriate, as a period of pre- incubation diffusion to minimize the effects of variation in time between the applications of the different solutions. Incubate them for about 24-48 hours at the temperature 30-35°C for bacteria and 20-25°C for yeast and mould. After completion of incubation accurately measure the diameters or areas of the circular inhibition zones and record the results.

Observation:

Dose of compound:	100 µl
	200 µl

Control	base
Dose of standard	1 mg /ml

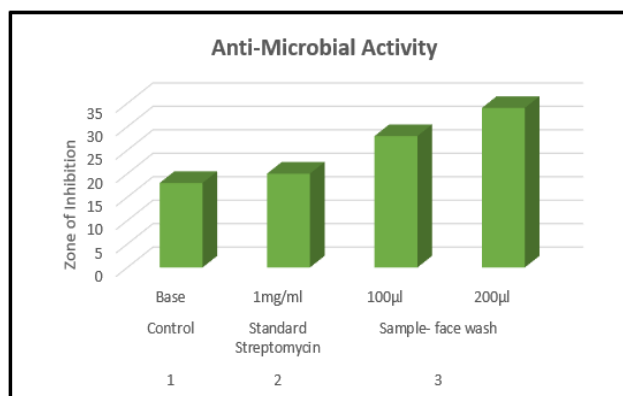


Figure 5. show Cultural plate of *S. aureus*
Observation table:

Table 2 Zone of Inhibition of *S. aureus*

Sr. No	Sample	Concentration	Zone of inhibition (mm) <i>S. aureus</i>
1.	Control	Base	18
2.	Standard Streptomycin	1 mg/ml	20
3.	Sample- face wash	100µl	28
		200µl	34

Graphical Representation:



RESULT:

During the study it has been found that sample face wash showed good inhibiting the growth of micro-organisms against *S. aureus*, propionobacterium acne as compared to standar

7) Anti-Acne Activity:

The antiacne activity is estimated by comparing the inhibition of growth of sensitive micro-organisms produced by known concentration of the isolated substance or extract or synthetic compound to be examined against a reference substance.

Method of Analysis:

Two general method usually employed; One is the cup-plate method [Agar well diffusion method]-The agar cup plate method depends upon diffusion of the antibiotic from a vertical agar [CUP] Cylinder through a solidified agar layer on a Petri dish. Sterile Agar is inoculated by suspension of the microbial inoculum. Then a hole with diameter of 6 to 8 mm is punched aseptically with a sterile cork borer or a tip, and then of the antimicrobial solution at desired concentration is introduced into the well. Then, agar plates are incubated under suitable conditions depending upon the test microorganism. The antimicrobial agent diffuses in the agar medium and inhibits the growth of the microbial strain entirely in a zone around the cylinder containing a solution of the substance to be tested.

Preparation of sample:

Sample directly used as 100 µl and 200µl in well.

Stock culture for Propionibacterium acne :

Streak a loopful of suspension on two slants of pre incubated Nutrient agar. Incubate the slants at 30-35°C for 24 hours in an incubator After incubation pick up the growth from incubated slant and inoculate in 3 ml of saline solution and vortex to prepare the uniform suspension. Adjust the O.D. of culture to approx. 60-70 % OD at 530 nm using sterile saline and calorimeter. After adjusting O.D. store the test organism in refrigeration at 2-8°C
Note: Approximately viable count is 10⁸ to 10⁹ cfu/ml against 60-70 %OD at 530 nm

Plate preparation for analysis:

After the suspension is prepared, use each 2 ml of culture suspension of *S. aureus* is to inoculate separately in 200 ml of sterile molten and cooled medium at 40°C - 45°C Antibiotic Assay Medium .15-20 ml of Sterilized agar medium is poured into a sterile Petri plate with the help of sterile measuring cylinder give a depth of 3 to 4 mm. Allow to cool at room temperature by placing the dishes or plates on a level surface. Keep plates in refrigerator for 15 to 20 minute for hardening. Ensure that the layers of medium are uniform in thickness. Make 4-5 agar cups on each plate using 8-10 mm SS borer. Label the plates for sample, standard and negative control samples and analysis details

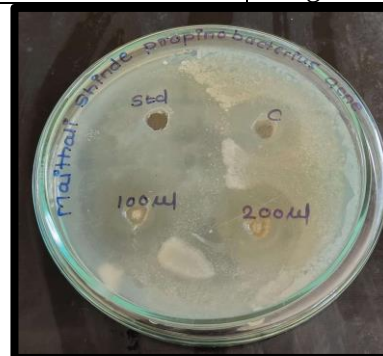
Analysis:

The volume of solution added to each cylinder or cavity must be uniform and sufficient most to fill the holes when these are used. Add 100 µl Img/ml = Solution B to agar cup labeled for each compound ID labeled on plate. Add 100 µl base to agar cup labeled as N (Negative). Leave the dishes or plates standing for 15-20 min. at 2-8°C or as appropriate, as a period of pre- incubation diffusion to minimize the effects of variation in time between the applications of the different solutions. Incubate them for about 24-48 hours at the temperature 30-35°C for bacteria and 20-25°C for yeast and mould. After completion of incubation accurately measure the diameters or areas of the circular inhibition zones and record the results.

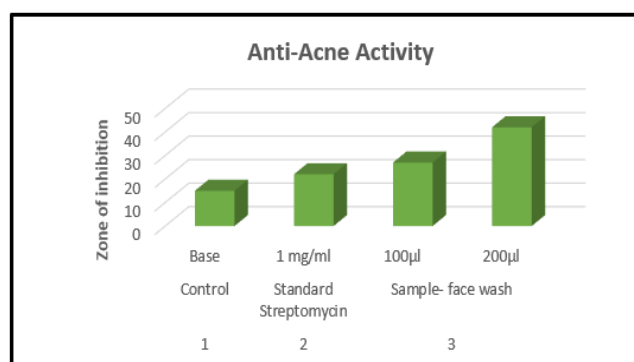
Observation:

Dose of compound:	100 µl
	200 µl

Control	base
Dose of standard	1 mg /ml

Figure 6. Show Culture Plate of *P. acne***Observation Table:****Table 3. Zone of Inhibition of P-acne**

Sr.No	Sample	Concentration	Zone of inhibition (mm) <i>P. acne</i>
1.	Control	Base	15
2.	Standard Streptomycin	1 mg/ml	22
3.	Sample- face wash	100µl	27
		200µl	42

Graphical Representation:

Result: During the study it has been found that sample face wash showed good inhibiting the growth of micro-organisms against propionibacterium acne as compared to standard. It shows better antiacne activity.

8) Viscosity: The viscosity of formulation was evaluated by Brookfield viscometer.

RESULT AND DISCUSSION:

The intention of the study was to create a cosmetic product with antibacterial and anti-acne qualities.

that would be both safe and effective. To improve stability and efficacy, humectants, foaming agents, gelling agents, and preservatives were included throughout the formulation process. Using the agar well diffusion method, the face wash was tested against *Propionibacterium acnes* and *Staphylococcus aureus* to determine its antibacterial activity. In comparison to conventional antibiotics, the results showed a considerable suppression of bacterial growth, indicating the herbal-derived face wash's ability to treat acne and preserve skin health. In order to ensure suitability for implementation, a number of criteria including viscosity, pH, Spreadability, Foamability and viscosity were evaluated.

Table 4 Result of Evaluation

Sr.No.	Test	Result
1	Colour	Orange
2	PH	6.8
3	Foamability	Form Foam
4	Spreadability	Easy to Spread
5	Washability	Washable
6	Antimicrobial	Positive
7	Anti-acne	Positive
8	Viscosity	1632cp



Figure 7. product

CONCLUSION:

In conclusion, the creation of a face wash that includes extracts from *Butea monosperma* (Palash), *Aloe vera*, and *Neem* offers a promising approach to skincare that has both medicinal and cleansing properties. The study emphasizes the

function of natural compounds with antibacterial, antioxidant, and anti-inflammatory characteristics in cosmetics. The new face wash showed promise in treating acne and maintaining skin health as it demonstrated strong antibacterial action against *Propionibacterium acnes* and *Staphylococcus aureus*. In addition, the composition was meticulously designed with viscosity, pH, foamability, and spreadability in mind to guarantee efficacy, stability, and safety. Along with other essential components, the addition of extracts from *Butea monosperma*, *Aloe vera*, and *Neem* emphasizes a holistic approach to skincare by utilizing the therapeutic properties of natural sources. All things considered, the face wash made from herbs serves as a sustainable, natural, and efficacious alternative for skincare therapies, satisfying the increasing customer demand for goods that promote both appearance and health.

REFERENCES

1. Nilima .A. Textbook of Cosmetic Science, Chodhari-Bhadre Technical publication, (2.1-2.17)
2. Wilkinson J. B., Moore R. J, Harry"S Cosmeticology: Longman Singapore Publishers Pvt. Ltd.; 7th Edition; 494.
3. Wilkison J. B, Moore R J, Harry Cosmetology: Sunscreen Lotion, Longman Singapore Publishers, 7Th Edition, 556-567.
4. Vinita D. Apraj1, Nancy S. Pandita: Evaluation Of Skin Anti Aging Potential Of *Citrus Reticulata* Blanco Peel .
5. Chopra RN, Nayar SL, Chopra IC.: Glossary Of Indian Medicinal Plants. Council Of Scientific And Industrial Research, New Delhi, 1956.
6. Jignasu P Mehta, Chintan V Pandya , Pravin H Parmar And Balu A Golakiya : isolation, Characterization And Antimicrobial Activity Of *Butea Monosperma* (Lam.)
7. Kasture VS, Chopde CT, Deshmukh VK: Anticonvulsive Activity Of *Albizia Lebbeck*,

Hibiscus Rosa Sinesis And Butea Monosperma In Experimental Animals, J Ethnopharmacol 2000; 71: 65–75.

8. Gupta SR, Ravindranath B, Seshadri TR: Glucosides Of Butea Monosperma. Phytochemistry 1970; 9: 2231–2235.
9. Pranay Jain, Dinesh Bansal, And Pragya Bhasin: Antibacterial Activity Of Aqueous Plant Extracts Against Escherichia Coli And Bacillus Subtilis, Drug invention Today 2009; 2(4):220- 222
10. C.K.Kokate, A.P. Purohit, S.B.Gokhale: Textbook Of Pharmacognosy, Nirali Prakashan, 57 Edition (9.10,11.1)
11. Isabelle Krolikiewicz-Renimel, Thomas Michel, Emilie Destandau, Madhukar Reddy, Patrice And, Claire Elfakir, Chantal Pichon: Antioxidant, Anti-Inflammatory And Matrix Metalloproteinases Inhibitory Activities, 2017.
12. Hufford CD, Funderburk JM, Morgan JM, Robertson LW (1975): Two Antimicrobial Alkaloids From Heartwood Of Liriodendron Tulipifera, I.J.Pharm. Sci., 64:789-792.
13. Umadevi S, Mohanta G P, Chelladurai V, Manna PK, Manavalan R(2003):Antibacterial And Antifungal Activity Of Andrographis Echiodes.J. Nat. Remedies., 3:185-188.
14. Saifullah Khan And Gul Majid Khan: In Vitro Antifungal Activity Of Rhazya Stricta, Pak. J. Pharm. Sci., 2007, Vol.20(4), 274-27.
15. Uchale Tushar P2 , Gosavi Akshata A3 , Gunjal Abhishek4 , Avanti R. Thanage, Formulation and Evaluation for Herbal Face Wash Khade Swati S1.
16. Aloe vera: Development of gel extraction process for Aloe vera leaves December 2012 Lambert Academic Publication, Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, Germany ISBN: 978-659-21648- 0[10:20 pm, 30/05/2022]

HOW TO CITE: Maithili Shinde*, Karishma Vhanwad, Formulation And Evaluation of Anti-Acne Face Wash Enriched with Natural Goodness, *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 12, 1530-1542. <https://doi.org/10.5281/zenodo.14407061>

