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To Formulate Herbal Face Wash from Pomegranate Peel Powder

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Abstract:- This study focuse on the formulation of a facewash using pomegranate peel extract, a by product rich in bioactive compounds. Pomegranate peel, often discarded as waste, contains polyphenols, flavonoids, and antioxidants known for their skin benefits. The extraction process involves optimizing conditions to maximize bioactive compound yield while maintaining stability. Formulation parameters such as surfactant type, pH, and viscosity are optimized to enhance product efficacy and consumer acceptance. The final product is evaluated for its physicochemical properties, stability, and skin compatibility through in vitro and , demonstrating its potential as a natural and sustainable ingredient in skincare formulations.

Keywords:- *Facewash, Herbal , Pomegranate, Alovera ,Tinospora Evaluataion.*

I. INTRODUCTION

Pomegranate (Punica granatum), an senior conclusion-bearing evanescent shrub, is the predominant member of two species comprising the Punicaceae blood. It's a native of the Himalayas in northern India, but it has been formed and naturalized throughout the Middle East, the exclusive European Mediterranean region, the drier corridor of southeast Asia, northern and tropical Africa, and to some extent the United States, specially California and Arizona. Pomegranate's conclusion is a voluminous berry represented by the presence of slim membranes in its innards, which have the suspense of multitudinous arils, each girdled by juice- containing sacs. Pomegranate excerpts have been exercised since senior moments to treat several conditions involving parasitic and microbial infections, diarrhea, ulcers, aphthae, hemorrhage, and respiratory complications. ultramodern operations carry hormone relief remedy and vocal hygiene as well as the treatment vulnerable repression and cardiovascular complications. also, other remedial parcels similar as antitumor,anti-inflammatory, antiviral, antibacterial, antidiarrheal, and antiobesity are presently under disquisition. Although pomegranate has been devoured and exercised as a medicinal food in the Middle East for thousands of times, it has lately gained fashionability in the United States. The high antioxidant exertion of pomegranate when assimilated to other fates and antioxidant potables, along with itsanti-inflammatory and antiobesity parcels, has swelled the interest in probing its implicit nutraceutical and active food operations. The number of scientific publications on pomegranate and its health-promoting advantages has swelled significantly in the last decade. thus, studying the bioactive factors of pomegranate and relating them with special mechanisms of action and health goods holds pledge for unborn remedial evolution of pomegranate- deduced natural productions. The end of this review is to epitomize the health goods and mechanisms of action of pomegranate excerpts in habitual seditious conditions. Pomegranate Benefits for Skin.

Fig 1: Pomegranate

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➢ *There are Many Benefits of Eating Pomegranate for Skin. here are Some of the Pomegranate Benefits for the Skin:*

- **Maintaining Youthful Skin**: Pomegranates are like skin superheroes since they contain antioxidants that guard against early aging of the skin. They combat the undesirable substance that makes your skin uneven with spots and wrinkles.
- **Softening and Moisturizing the Skin**: Your skin needs moisture to remain hydrated. Punicic acid, found in pomegranate seeds, helps keep your skin smooth and moisturized. That's why your skin feels amazing after using pomegranate-based cosmetics.
- **Healing the Skin:** There may be moments when your skin is harmed or damaged. Pomegranates include polyphenols, which encourage the growth of new skin cells, thus they can help in the healing and improvement of your skin.
- **Sun Protection**: Pomegranates can boost your skin's UV defenses. Antioxidants found in them shield your skin from UV deterioration. However, while it helps your skin with sun protection, you can't replace it with sunscreen.
- **Maintaining Clear Skin**: You are aware of the discomfort that zits and acne can cause. Pomegranates offer anti-inflammatory qualities that can calm irritated, red, or rough skin. Additionally, they sell items that can kill the dangerous bacteria that cause acne.
- **Eliminating Dark Spots:** Your skin's dark spots may make you feel self-conscious. By limiting the amount of dark pigment your skin produces, pomegranates can help fade those spots and even out your skin tone. It is one of the main benefits of eating pomegranate for skin.
- **Restore Skin Damaged:** If your skin has been harmed by scars or blemishes, pomegranates can aid. They contain a lot of vitamin C, a powerful vitamin for mending skin.
- **Lessen Itching and Redness:** If eczema or psoriasis have gotten the best of you, your skin may experience irritation and redness. Looking to reduce inflammation and itching? Pomegranates are the answer. They boast excellent skin-calming properties.

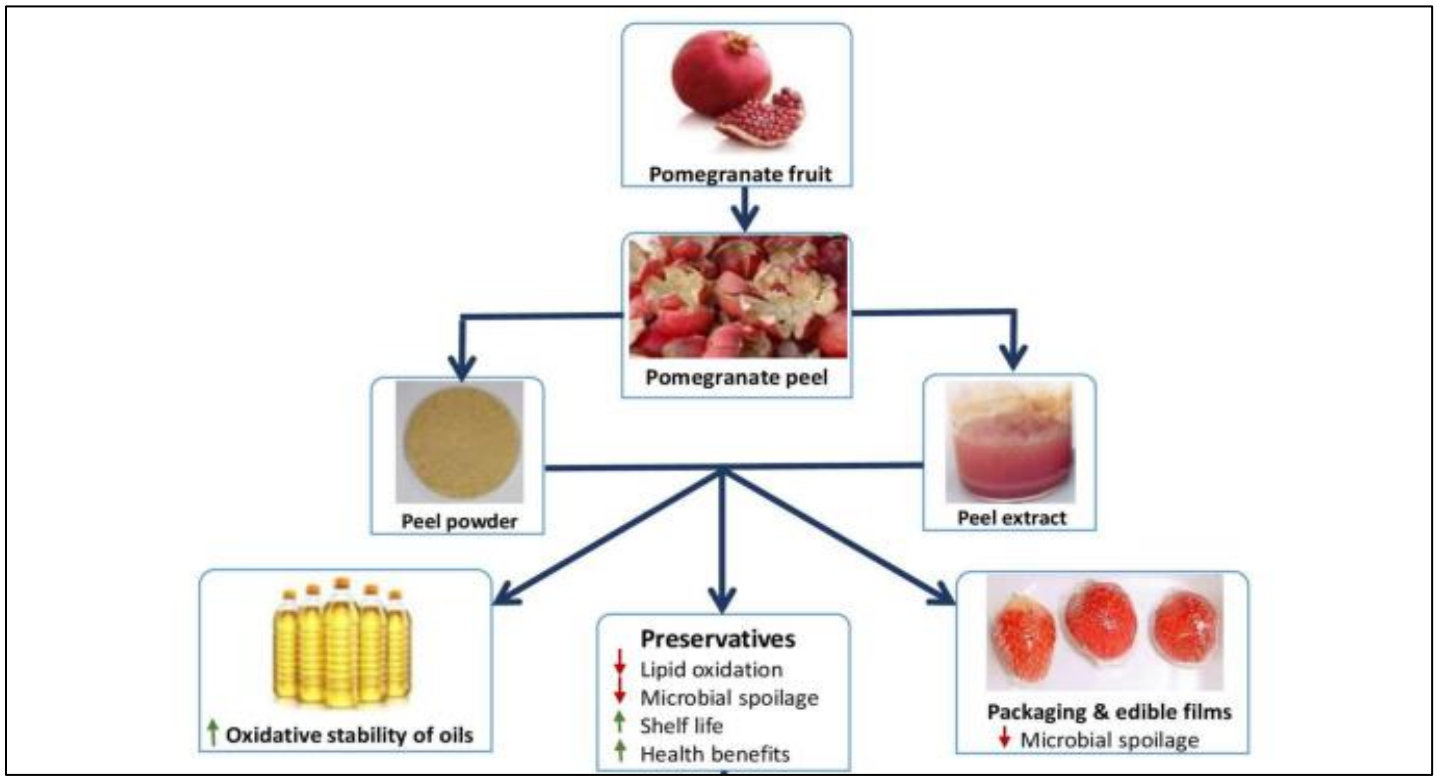

Fig 2: Pomegranate Peel Uses

➢ *Chemical Constituent:*

Pomegranates contain many chemical constituents that can benefit the skin, including antioxidants, vitamins, and acids, Ellagic acid and punicalagin are both bioactive compounds of pomegranate rind that promote skin health by inhibiting tyrosinase and initiating anti-inflammatory and anti-fungal effects.

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II. MATERIAL AND METHOD

Fig 3: Pomegranate Peel

- Pomegranates were carefully washed, rinsed and cut to separate the peel from the arils. The by-products were dried in a food dehydrator (at 38 °C for 48 h) up to a final humidity of 8.77%. After drying, the by-products were ground into a powder in a lab blender and then sieved.

Fig 4: Almond Oil

- The most common methods for obtaining oil are solvent extraction, extraction with supercritical fluids (CO2) and pressure systems (hydraulic and screw presses). The best industrial performance, but also the worst oil quality is achieved by using solvents.

Fig 5: Aloevera

- It was concluded that the extraction of gel from aloevera should be carried out at 50C temperature for 10000 rpm speed and 30 min duration of centrifuge, so as to obtain higher gel recovery and good quality gel. Higher temperature reduces viscosity which leads decrease in biological activity of aloevera gel.

Fig 6: Tinospora

- To make Tinospora cordifolia leaf powder, you can crush dried leaves into a fine powder using a mortar and pestle. then extract the powder with solvents, such as water using the maceration method. For this dissolve 20 grams of the powder in 200 milliliters of solvent, filter the solution with filter paper, and evaporate the filtrate to dryness at room temperature. Finally, scrape out the contents and store them at 4°C to preserve their bioactivity and prevent contamination.

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Table 1: Ingedients for Face Wash

Sr.no.	Name of Ingredients	Quantity Given	Uses
1.	Almond oil	0.25ml	Using a cleanser.
2.	Tinospora	2 mg	antioxidant.
3.	Extract Aloe vera	1.5 ml	Eczema, psoriasis,
4.	Pomegranate peel	1.5ml	Antioxidants and acne treatment.anti microbial
5.	Rose water	q.s.	Flowering Agent
6.	Glycerin	q.s.	Humectant
7.	Methyl paraben	0.15ml	Antifungal Preservative
8.	Sodium lauryl sulfate	0.5ml	Foaming agent
9.	Water	q.s.	Solvent
10.	Accacia, Carbacol, Gelatin	0.5%	Gelling Agent

➢ *Method and Development of Formulation:*

- Accurately weigh ingredients Tinospora 2mg, Almond oil 0.25 ml, Pomegranate peels powder 1.5 mg and Extract of Aloe vera 1.5 ml.
- Mix well all ingredient in water and allow to heat in water bath.
- Then glycerin is added and stirr it.
- Add methyl paraben, Sodiun lauryl sulphate and rose water.
- The desired concentration of gelling agent i.e., carbacol, accacia gelatin was counted accurately and dispersed in hot rose water (not further than 60 °C; 50 weight of the batch size) with moderate shifting, avoiding air ruse and allowed to soak overnight.
- Wanted volume of bomb juice was dissolved in asked quantum of honey by gentle shifting.
- Wanted volume of concentrated herbal excerpts was added to the remaining quantum of rose water and associated with below honey admixture by gentle shifting.
- This was eventually mixed with preliminarily soaked gel expression. Prepared phrasings were filled in a able vessel and labeled consequently.

Fig 7: Formulation of Face Wash

A. Evaluation Parameter:

➢ *Physical Evaluation:*

Physical parameters, such as color, appearance and consistency are examined for people with visual impairment.

➢ *Wash Ability:*

The formulation has been used on the skin and then easily verified after washing with water.

➢ *pH:*

Using a digital pH meter calibrated at constant temperature, the pH of 1% of the hydro transpiration is calculated.

➢ *Spreading Coefficient:*

A ground glass slide was fixed on the wooden block. 2 gm of gel under study was placed on this ground slide. The gel preparation was then sandwiched between this slide and second glass slide having same dimension as that of the fixed ground slide. The second glass slide is provided with the hook. Weight of 500mg was placed on the top of the two slides for 5 min to expel air and to provide a uniform film of the gel between the two slides. Measured quantity of weight was placed in the pan attached to the pulley with the help of hook. The time (in sec) required by the top slide to cover a distance of 5 cm was noted. A shorter interval indicates better spreading coefficient (Gupta and Gaud, 2005). Spreading coefficient of prepared gel was compared with the marketed gel.

➢ *Viscosity*

The viscosity of face wash was determined by using Brookfield Viscometer. The Values Obtained for sample is noted.

➢ *Irritancy Test:*

The face wash was applied on left hand dorsal surface of 1 sq. cm and observed in time interval 1 to 2 hrs.

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➢ *Patch Test:*

Patch testing is well established method for diagnosing the hypersensitivity as well as to determine the potential of a specific substance to cause the allergic action on patient skin. In patch test a small area of skin is exposed to those chemicals in dilute form whose specific effect on skin is to be studied. In patch test reaction of formulation on skin is observed in 2-3 days.

B. Anti –Microbial Test:

- **Preparation of Nutrient Agar Plates**: Prepare nutrient agar plates Suspend 1.4g of nutrient agar powder in 50ml of distilled water. Mix and dissolve them completely. Sterilize by autoclaving at 121°C for 15 minutes and allow them to solidify. Nutrient agar is a general-purpose growth medium that supports the growth of a wide range of microorganisms.
- **Inoculation**: Inoculate the surface of the agar plates with a standardized quantity of a test microorganism, such as Staphylococcus aureus or Escherichia coli, which are commonly used to test antimicrobial activity. This is usually done by spreading a bacterial suspension over the surface of the agar using a sterile spreader.
- **Application of Face Wash**: Apply the face wash to the agar surface using a sterile technique. This could be done by soaking sterile discs with the face wash and placing them on the inoculated agar surface, or by creating wells in the agar and filling them with the face wash.
- **Incubation**: Incubate the plates at an appropriate temperature (usually 35-37°C for human pathogens) for a specified period (often 18-24 hours) to allow the microorganisms to grow.

III. RESULT AND DISCUSSION

➢ *Herbal Face Wash was Formulated Using Simple Gel Preparation Method*

Table 2: Final Observations

Sr. No.	Parameters	Observation
1	Color	Brown
2	Odour	Characteristic
3	Consistency	Good
4	pH	6
5	Viscosity	1.4 poise
6	Spread ability	9.3 ± 0.23
7	Washability	Easily washable
8	Irritability	Non irritant
9	Patch test	no allergic action

Fig 8: Irritancy Test

Fig 9: Foamability

Fig 10: Wash Ability

Fig 11: pH Test

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Fig 12: Spread Ability

- **Antimicrobial Test**: After incubation, observe the plates for zones of inhibition around the discs or wells where the face wash has been applied. A zone of inhibition is a clear area around the antimicrobial source where no bacterial growth occurs. Measure the diameter of the zones of inhibition with a ruler or calipers.

✓ Large zones of inhibition: Indicate that the face wash has strong antimicrobial activity against the test organism.
✓ Small zones of inhibition: Suggest that the face wash has weak antimicrobial activity.

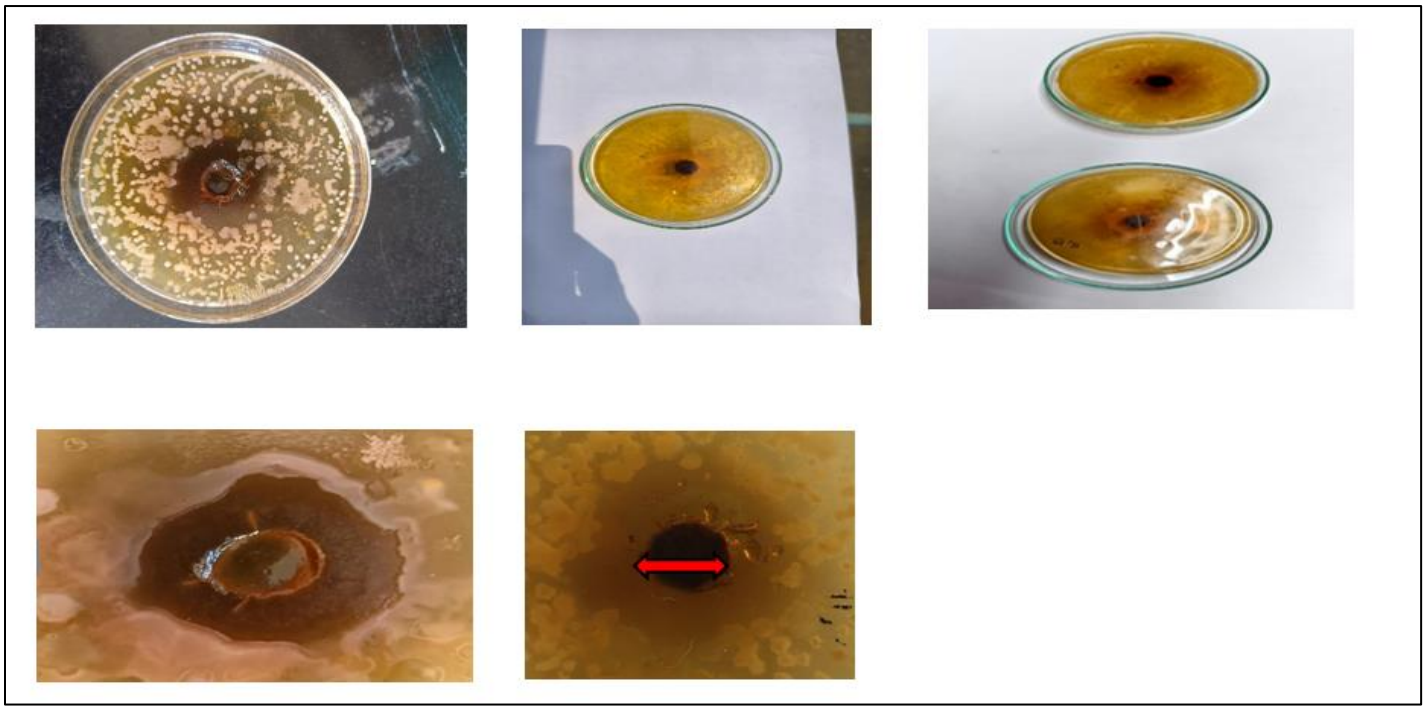

Fig 13: Zones of Inhibition Antimicrobial Test

IV. CONCLUSION

Herbal face washes show promise for various skin benefits, the evidence is mixed, and more research is needed to fully understand their efficacy and safety. Individuals considering herbal face washes should carefully consider their skin type and condition, research specific ingredients, and possibly consult with a dermatologist before making a switch.

In this project we prepared herbal Facewash is used to remove the pimples and acne, also removing oil dirt and impurities.In this Project the formulation of herbal facewash following concept are include; Almond oil is use for cleanser, Tinospora and Pomogranate Peels used as antiacne activity, Rose water is used as Flowering Agent and Glycerin is used as Humectant. Herbal Facewash should effectively and completely remove the dust, excessive sebum and produce good amount of Foam.

Pomegranate face washes have gained popularity due to the numerous benefits attributed to pomegranate extracts. When discussing the results of using a pomegranate face wash, it's important to consider the general properties of pomegranate and how they might affect the skin. Antioxidant Protection, Improved Skin Hydration, Enhanced Skin Elasticity, Brightening Effects.

In the present scenario many people need cure and care for various skin problems without side effects. Herbal ingredients opened the way to formulate cosmetic products without any harmful effect. Herbal face wash and herbal face creams are considered as sustaining and productive way to advance the appearance of face skin.

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