EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 11
Issue: 7
111-117
Year: 2024

FORMULATION OF MULTI HERBAL SCRUB OF POMEGRANATE AND JAMUN

Kamble S. A.*, Aiwale B. V., Salunkhe S. B., Jagtap S. S., Jadhav S. M., Lawate S. B., Dr. Panaskar A. N. and Dr. Panaskar B. A.

Padmini College of Pharmacy, Dighanchi, Tal-Atpadi, Dist-Sangli, Maharashtra, India-415315.

***Corresponding Author: Kamble S. A.**
Padmini College of Pharmacy, Dighanchi, Tal-Atpadi, Dist-Sangli, Maharashtra, India-415315.

Article Received on 01/05/2024 **Article Revised on 21/05/2024** **Article Accepted on 11/06/2024**

ABSTRACT
In a procedure known as exfoliation, a face scrub employs tiny particles, beads, or chemicals to remove old skin cells and make room for new ones. Exfoliants are the agents that are employed in exfoliation. Exfoliating agents work by removing dead skin cells and increasing blood flow to the skin, leaving it radiant and refreshed. It helps maintain clean skin pores by keeping the face free of debris, oil, and grime. The primary goal of this study was to create a herbal face scrub that included lentil pulse as the primary active ingredient. Natural ingredients are used in herbal cosmetics because they have the ability to prevent wrinkles and acne as well as help regulate oil secretion from the skin by opening pores. Remove dead skin cells from the epidermis. The word exfoliate, which means "to strip off leaves," is Latin in origin. Every facial includes exfoliation, which can be done chemically or mechanically with procedures like chemical peels or microderm abrasion. Pomegranate, jamun, tulsi, neem, aloevera, turmeric, walnut granules, fuller's earth, and rosewater are used in this formulation. Jamun and pomegranate are utilized as APIs. It has anti-aging and antioxidant qualities.

KEYWORD: Pomegranute, Jamun, Tulsi, Neem, Aloevera, Turmeric, Walnutgranules, Antioxidant, Antiaging, Anti-inflammatory, Herbal Scrub.

INTRODUCTION
Various herbs have been utilized for many purposes since ancient times, including cleansing, beautifying, feeding, and much more. The primary component of the body that determines a person's health is their face skin.[1] Scrubbing is done mostly for exfoliation. "To remove unwanted dead skin cells from the skin" is the definition of exfoliation. A mild exfoliating treatment that works for all skin types is scrub. Two primary categories of exfoliation techniques exist

- Physical exfoliation.
- Chemical exfoliation.

The Greek term "kosm tikos," which means to have the ability to organize, power, or skill in decorating, is where the word "cosmetics" originated. The development of cosmetics throughout human history is a continuous narrative in and of itself.[2] Cosmetics have roots in superstition, religion, warfare, and hunting.[3] Later, they were linked to medicine. Herbal Cosmetics, often referred to as Products, are made with a variety of approved cosmetic ingredients as a basis, and then one or more herbal ingredients are added to provide certain cosmetic benefits only. This process results in what is known as "Herbal Cosmetics".[4] These active compounds have numerous benefits, including improving skin suppleness, delaying the aging process by minimizing wrinkles, providing antioxidant protection from UV rays, and preventing collagen degradation.[5]

What is Exfoliant?
In a procedure known as exfoliation, a face scrub employs tiny particles, beads, or chemicals to remove old skin cells and make room for new ones. Exfoliating agents work by removing dead skin cells and increasing blood flow to the skin, leaving it radiant and refreshed. It helps to keep the pores of the skin clean by keeping the face free of oils, dirt, and dust. During an exfoliation, the oldest dead skin cells are removed from the skin's surface. The word exfoliate, which means "to strip off leaves," is Latin in origin. Every facial includes exfoliation, which can be done chemically or mechanically with procedures like chemical peels or microdermabrasion. Exfoliants are frequently promoted as remedies that enhance health, beauty, or a young appearance.[6]

❖ Benefits of Scrub
- Aids in the Removal of Dead Cells: Body or facial scrubs are cosmetics that work beneath the surface to expose healthy, glowing skin beneath dead skin.

- Deep Cleaning of Skin: Exfoliating your skin removes debris, oil, and perspiration. The skin cannot be cleaned by face wash or facial cleansers.
- Scrubbing is an excellent way to remove dust that has accumulated on the skin.

MATERIAL AND METHOD[7]

A] Ingredients, uses and their role

Table No. 1: List of ingredients and their uses.

Sr. No	Ingredients	Uses
1.	Pomegranate	Anti - aging and antioxidant properties.
2.	Jamun	Poses anti-aging and antioxidant qualities in addition to shielding the skin from UV rays.
3.	Neem (Extract)	Treat dry skin, encourage the creation of collagen, lessen scarring, heal wounds, handle acne, and diminish moles and warts.
4.	Tulsi (Extract)	anti-contagious
5.	Aloe vera	soothe sunburn, hydrate skin, prevent aging of the skin, lessen acne, and lighten imperfections
6.	Carbopol 934	Gelling and thickening agents
7.	Methyl paraben	Preservative
8.	Triethanolamine	Neutralizer
9.	Glycerin	Emollient
10.	Fullers Earth (Multani mitti)	Enhances skin elasticity, fights acne and pimples, absorbs oil and pollutants, and gives skin a fair and glowing complexion.
11.	Turmeric (Haldi)	Reduce acne and the scars it leaves behind; anti-inflammatory, antioxidant; gives skin a healthy sheen and luster
12.	Walnut granules	Scrubing agent.
13.	Sodium sulphate lauryl	Surfactant used as a cleaning and foaming agent
14.	Rose water	Perfume

1) Materials and Instruments

Below is a brief overview of the glassware, tools, chemicals, and reagents that were employed in the investigation.

2) Glass Ware

Conical flask, funnel, glass rod, pipettes, measuring cylinder, test tube, beaker, brush, dropper, crucible, capillary tube, and iodine flask are among the tools used in this experiment.

3) Instrument

Hot air oven, Desiccator, rotatory flask shaker, water bath, electronic scale, mixer grinder, spatula, heating mantle, needle, and mortar and pestle.

4) Reagents

Fehling's answers A and B, The following reagents: Hager's reagent, Million's reagent, Anthrone's reagent, Wagner's reagent, Mayer's reagent, Alpha nephthol solution, and Dragendorff's reagent phosphate acid, ammonia solution, and aqueous basic lead acetate solution.

5) Preparation of Sample Extracts

In a closed iodine flask, macerate the 2g extract sample with 100 ml distilled water separately for 24 hours, shaking frequently for the first 6 hours, and then let it stand for 18 hours to analyze the phytochemicals. Next, Whatman filter paper No. 1 was used to filter the solution. The various bioactive components were analyzed using the extracts.

B] Preliminary Phytochemicals Sreening Of Neem, Tulsi And Turmeric[8]

The following methods were used to analyze the extracts from successive solvent extractions in order to find out which phytoconstituents were present, including alkaloids, carbohydrates, proteins, resins, saponins, starch, flavonoids, steroids, glycosides, tannins, quiones, and phenolic compounds.

1) Test for Alkaloids

- Mayer's test: One milliliter of the powder's acidic aqueous extract was mixed with a few drops of Mayer's reagents.

2) Test for Carbohydrate

- Anthrone's test: Add 0.5 ml of powdered aqueous extract to 2 ml of Anthrone's test solution. Fehling's Test: Boil the contents of the test tube for a few minutes after adding 1 ml of a mixture of equal parts Fehling's solution A and Fehling's solution B to 2 ml of aqueous extract of powder.

3) Test for Proteins

- Millon’s test: After combining a little amount of residue with two milliliters of water, mix with Millon's reagent, boil for one minute, and then let cool under tap water. Add 5 drops of 1% sodium nitrite.

4) Test for Resins

1ml of extract was dissolved in 1 ml of acetone, and the mixture was then added to 5 ml of distill water.

5) Test for Quinones

An alcoholic potassium hydroxide solution was used to treat 1 milliliter of the sample extract.

6) Test for Phenolic Compounds

After warming the extract in water, two milliliters of ferric chloride solution were added, and the mixture was watched.

C] Method of Preparation

a) Collection

We gathered leaves from the nearby rhizomes of neem, turmeric, aloevera, and tulsi.

1. Preparation of Extract

Neem leaves, turmeric rhizomes, and tulsi leaves were all maintained in a hot air oven set at 45°C for this purpose. The materials were then ground into tiny bits using a grinder to create a powder.

2. Preparation of Turmric, Neem and Tulsi Extract

The desired amounts of herbal medications were measured, and each herb was macerated in a conical flask with ethanol. For three days in a row, ethanol and dried herbs were combined with gentle shaking in a conical flask. Following three days, the contents were removed using a straightforward filtration technique, and the filtrates were gathered in different vessels.

Fig. 1: Neem, Tulsi and Turmeric extract.

3. Preparation of Aloe Vera Gel

Collect fresh aloe vera leaves and physically remove the gel. A mixer was used to grind the gel into a homogenous state.

b) Preparation of pomegranate peel powder (PPP)[12]

Peel and other waste parts were separated by cutting the peel into pieces with a stainless steel knife, pretreating it for 10 minutes with a 2% salt solution, draining the salt water, and then washing it again with tap water and draining the water. The peels were then spread out on a stainless steel tray and dried under a ceiling fan to remove surface water. These peels were removed in order to dry. After the dried pieces were cooled, they were ground into a powder using a laboratory disc mill and sieved through a 20 mesh screen. The powder was then sealed in high-density polyethylene bags and kept at room temperature (around 25±5ºC) until needed.

c) Preparation of pomegranate seed powder (PSP)[12]

The harvested pomegranate seeds were then repeatedly cleaned in water and vacuum-dried for twenty-four hours at 60±5ºC. It had a moisture content of 5.6–7%. The disc mill in the laboratory was used to grind the dried seeds right before extraction. According to the sieve employed for the extraction, ground seeds had a mean particle size distribution of less than 40 mesh.[11]

On the other hand, the powdered defatted pomegranate seed was dried at 45±5ºC in a vacuum oven. After that, the powdered dried defatted pomegranate seeds was cooled, thoroughly ground, sealed in polyethylene bags, and kept in a deep freezer at -18±2º until needed.

d) Making powdered jamun seeds[16]

Jamun fruits that are sound, disease-free, and evenly developed must be chosen. A pulper was used to separate the jamun fruit's pulp and seed. After that, the seed was cleaned with water, dried for 48 hours at 60°C in a tray drier, and ground into a fine powder with an average particle size of 0.58 mm using a pulverizer.

Choosing fully ripe, healthy, and disease-free jamun fruits

⇩

Washing/Cleaning

⇩

A pulper was used to separate the jamun's pulp and

⇩

Seeds washed in water

⇩

Cabinet tray drier set to 60˚C for 48 hours of drying

⇩

Pulverizer used to grind seeds into a fine powder

⇩

Powder particle size separation (0.58 mm)

⇩

Packaging and storage.

Composition of Developed Formulation[17]

Table No. 2: Composition of Developed Formulation.

Sr. No	Ingredients	Quantity Taken For 30g Gel		
		F1	F2	F3
1	Pomegranute peel and seeds powder	1gm	1gm	1gm
2	Jamun seeds powder	0.5gm	0.5gm	0.5gm
3	Neem	0.8ml	1ml	1ml
4	Tulsi	0.5ml	0.5ml	0.4ml
5	Aloe vera	2.4ml	2ml	2ml
6	Turmeric	0.1ml	0.1ml	0.1ml
7	Carbopol934	0.5gm	0.6gm	0.6gm
8	Methyl paraben	0.4gm	0.6gm	0.6gm
9	Triethylamine	0.4ml	0.4ml	0.3ml
10	Glycerine	1.5ml	2ml	2ml
11	Fullers earth	2.1gm	2gm	2.2gm
12	Exfoliating Walnut granules	8gm	8gm	8gm
13	Sodium lauryl sulphate	0.8gm	0.8gm	0.8gm
14.	Rose water	Q.S	Q.S	Q.S

Formulation Development

a) Step 1: Combine triethylamine, glycerin, and methayl paraben in a separating beaker.

b) Step 2: In a separate container, combine neem extract, tulsi extract, aloe vera gel, walnut granules, multani mitti, glycolic acid, and methyl paraben.

c) Step 3: Add a small amount of alcohol to the carbopol mixture, then add the aloevera gel and thoroughly triturate in a pestle and mortar.

In a pestle and mortar, combine the ingredients from stages 1 through 3 while gently swirling continuously. Gradually add rose water until the recipe does not create a semi-solid consistency.

Evaluation parameter of facial scrub[17]

1. Organoleptic Properties

a) Colour - The color of formulation was checked manually and observed as mustered yellow.

b) Odour - The smell of formulation was checked by applying preparation on hand and feels thefragrance of perfume.

c) Consistency - The consistency of the formulation and particles were used to check the textureand homogeneity of preparation on the skin such as stiffness, grittiness, greasiness effect. Preparation found semi-solid in nature.

d) Homogeneity and Texture - It was tested bypressing a small quantityof the formulated scrub between the thumb and index finger.

2. Washability: This test was performed directly on skin, preparation applied on skin and washwith normal water, after washing clean and clear skin observed.

3. PH: pH of 1% aqueous solution of formulation was measured by using a calibrated digital pH meter and result found 7.3-7.7.

4. Viscosity: For Viscosity measurement, Brookfield viscometer “DV-I, LV-I SPINDLE, USA” used, and result observed as 505- 705cp at 20 rpm.

5. Extrudability: It is usual empirical test to measure the force required to extrude the material from tube. More quantity extruded, better the extrudability. The formulation under studywas filledin a clean, aluminum collapsible tube with nozzle tube of 5mm opening and applies pressure on tube by the help of finger. Tube extrudability was then determined by measuring amount of formulation extruded through the tip when the pressure was applied on tube.

6. Skin Irritation: Small quantity of the preparation was applied on the dorsal part of hand and kept for few minutes and found to be non-irritant, No redness and edema or any other adverse effect.

7. Spreadability: A herbal sample was put on one of the two slides that were collected. The first slide had another slide on it. On the slides, 100 g of weight was maintained in order for it to spread into a thin layer. Weight loss was achieved at a considerably higher level than in inmates. A 20 g weight was then maintained on the upper slide. Three times through the process, the average was determined. Spreadability was determined by applying the subsequent formula:

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

Where, S- Spreadability; M- Weight tied to the upper slide (20 g); Length of the glass (6.5 cm); Time in 23 sec.

8. Patch Test: Patch testing is a tried-and-true technique for identifying hypersensitivity and assessing the likelihood that a particular material would trigger an allergic reaction on a patient's skin.

In an inpatch test, a small patch of skin is exposed to the

diluted substances whose particular effects on the skin are to be investigated.

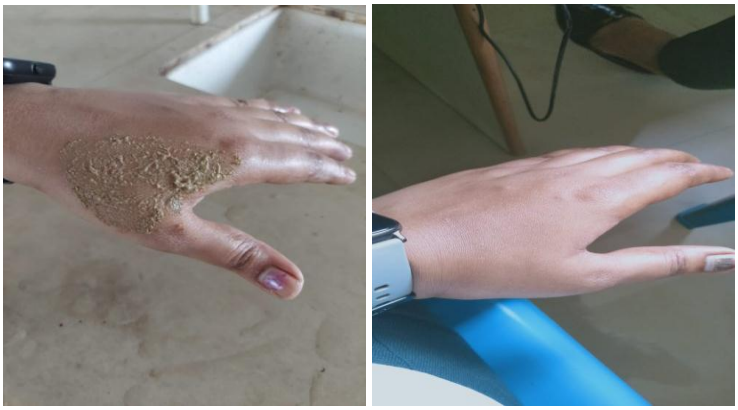

Fig. No.02: Observation of Patch Test.

9. Accelerated Stability Test: The most stable formulation at room temperature over a seven-day period was subjected to an accelerated stability test.

10. Grittiness: The product was applied to the skin to see if it contained any gritty particles.

RESULTS AND DISCUSSION

Preliminary phytochemical Screening of aqueous extract result.

Table No. 3: Preliminary Phytochemical Screening Of Aqueous Extract.

Sr.No.	Name of experiments	Observations			
		Neem	Tulsi	Turmeric	Aloe vera
1	Alkaloids Mayer‟s test	Positive	Negative	Positive	Positive
2	Carbohydrate Anthrone‟s test	Positive	Negative	Negative	Positive
3	Proteins Millon‟s test	Positive	Negative	Negative	Negative
4	Resins	Negative	Positive	Positive	Positive
5	Quinone	Negative	Negative	Positive	Positive
6	Phenolic compounds	Positive	Positive	Positive	Positive

Result of Evaluation Parameter

Table No. 4: List of Result Evaluation Parameter.

Sr. No.	Parameters	Observation		
		F1	F2	F3
1	Colour	Mustard Yellow	Mustard Yellow	Mustard Yellow
2	Odour	Characteristic	Characteristic	Characteristic
3	Nature	Semisolid	Semisolid	Semisolid
4	Consistency	Smooth	Smooth	Smooth
5	Homogeneity	No Aggregation	No Aggregation	No Aggregation
6	Washability	Washable	Easily Washable	Washable
7	pH	7.7	7.6	7.4
8	Viscosity	505cp	655cp	705cp
9	Extrudability	Extruded	Easily Extruded	Easily Extruded
10	Spreadability	5.70 Cm/Sec	5.60 Cm/Sec	5.66 Cm/Sec
11	Skin Irritation	No Irritant Action	No Irritant Action	No Irritant Action
12	Grittiness	Small Gritty Particle	Small Grity Particle	Small Grity Particle
13	Patch Test	No Allergic Reaction	No Allergic Reaction	No Allergic Reaction

Studies on Stability: The F2 formulation's stability studies yield positive findings after seven days; the numbers are listed below.

Table No. 5: List of Result Stability Studies.

Sr.No.	Parameters	Observation Of F2 Formulation		
		Day 1	Day 3	Day 7
1	Colour	Mustard Yellow	Mustard Yellow	Mustard Yellow
2	Odour	Characteristic	Characteristic	Characteristic
3	Nature	Semisolid	Semisolid	Semisolid
4	Consistency	Smooth	Smooth	Smooth
5	Homogeneity	No Aggregation	No Aggregation	No Aggregation
6	Washability	Easily Washable	Easily Washable	Easily Washable
7	pH	7.4	7.6	7.3
8	Viscosity	505cp	550cp	530cp
9	Extrudability	Easily Extruded	Easily Extruded	Easily Extruded
10	Spreadability	5.40 Cm/Sec	5.60 Cm/Sec	5.30cm/Sec
11	Skin Irritation	No Irritant Action	No Irritant Action	No Irritant Action
12	Grittiness	Small Gritty Particle	Small Gritty Particle	Small Gritty Particle
13	Patch Test	No Allergic Reaction	No Allergic Reaction	No Allergic Reaction

CONCLUSION

The goal of the current study was to make and assess herbal scrub. Based on the data above, it can be concluded that the new herbal scrub formulation is safe to use, that the lentil pulse employed as a scrubbing/cleaning agent is effective, and that the likelihood of adverse effects is reduced because the majority of the ingredients are natural. Any type of skin, including dry, oily, and normal, can use it. It produces the best outcomes and leaves skin healthy and radiant. The current study developed herbal face scrub and assessed it according to a number of criteria. The formulation passed the testing, according to the results. Better outcomes are obtained, and the skin appears brighter and more vibrant. The dorsal region received a smaller application of the combination of the hand for a while and discovered that it was not causing any irritation, redness, or other negative effects. This multiherbal face scrub is made entirely of natural components. Therefore, there is a lower probability of adverse effects. F1 and F3 are less successful than F2. To achieve the greatest skin outcomes, we can apply this herbal face scrub.

AKNOWLEDGEMENT

We would like to extend our heartfelt appreciation to everyone who contributed to the successful completion of this project. Our sincere thanks go to our project team members for their dedication and collaboration throughout the project. Each member played a significant role in shaping the outcome. Special thanks to our Principal, Dr. A.N. Panaskar sir for their guidance and valuable feedback, which enriched our work.

REFERENCE

1. Sachin B. A., Amol U. G., et al, Preparation and evaluation of polyherbal facial scrub, Journal of Drug Delivery and Therapeutics, 2019; 9(2): 61-63.
2. Pandey Shivanand, Meshya Nilam, D.Viral, Herbs Play an Important Role in the Field ofCosmetics, International Journal of PharmTech Research, 2010; 2(1): 632-639.
3. Draelos ZD, Botanical antioxidants, Cosmetic Dermatol, 2003; 16(10): 41-42.
4. Glaser DA, Anti-ageing products and cosmeceuticals. Facial Plast Surg, Clin N Am, 2004; 12(4): 363-372.
5. Rousseaux CG and Schachter H, Regulatory issues concerning the safety, efficacy and quality of herbal remedies. Birth Defects Res. B, Dev Reprod Toxicol, 2003; 68(6): 505-510.
6. "Formulation and evaluation of herbal scrub using tamarind peel" Ghadage P. K.*1 ,Mahamuni S. S.1 , Kachare D. S.2.
7. Kokate C.K., Purohit A.P., Gokhale S.B., "Pharmacognosy" Nirali Prakashan, 52nd edition. Page no. 19.1-19.2, 14.21, 14.91, and 14.132.
8. Vandana Pathak, Vipin kumar Tiwari phytochemical screening of saccharum officinarum (Linn.) stem. International journal of innovative and research technology, 31.
9. Hassan FA, Ismail A, Hamid AA, Azlan A, Al-sheraji, SH. Characterisation of fibre-rich powder and antioxidant capacity of Mangifera pajang K. fruit peels. Food Chemistry. doi:10.1016/j foodchem.2010.11.019.
10. Kushwaha SC, Bera MB, Pradyuman K. Nutritional composition of detanninated and fresh pomegranate peel powder. J Environmental. Sci, Toxi. Food Techno., 2013; 7(1): 38 42.
11. Ahangari, B. and L. Sargolzaei, Extraction of pomegranate seed oil using subcritical propane and superitical carbon dioxide. Theoretical Foundations of Cheical Engineering, 2012; 46(3): 258-265.
12. 1., Rowayshed, G., 1 Salama, A., 1 Abul-Fadl, M., 2 Akila-Hamza, S. and 2 Emad, A. Mohamed. Nutritional and Chemical Evaluation for Pomegranate (Punica granatum L.) Fruit Peel and Seeds Powders by Products. Middle East Journal of Applied Sciences, 2013; 3(4): 169-179. ISSN 2077-4613.
13. Sadasivam S, Manickam A. Biochemical Methods. New Age International (P) Publishers, Second edition, 2005; 193-194.

14. Egdhami A, Asli DE. Determination of antioxidant capacity of pomegranate juice by using 2, 2-Diphenyl-1-picrylhydrazyl. Org. Chem. J., 2010; 1: 30-33.
15. 1 Rowayshed, G., 1 Salama, A., 1 Abul-Fadl, M., 2 Akila-Hamza, S. and 2 Emad, A. Mohamed. Nutritional and Chemical Evaluation for Pomegranate (Punica granatum L.) Fruit Peel and Seeds Powders by Products, Middle East Journal of Applied Sciences, 2013; 3(4): 169-179.
16. Desai GB, Kshirsagar RB and Sawate AR. Effect of Jamun (Syzygium cumini) seed powder extract on physico-chemical and organoleptic properties of beverage, The Pharma Innovation Journal, 2019; 8(4): 1003-1010.
17. Anjali Shinde1, Bhagyashri Gayke2, Madhuri Khandgaonkar3. Formulation and Evaluation of Herbal Face Scrub, ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538. Jul., 2023; 11(6). Available at www.ijraset.com