



# Assessment And Development Of Anti-Acne Herbal Facial Scrub.

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## 1. Abstract

Acne vulgaris is one of the most prevalent dermatological conditions, often associated with excess sebum production, clogged pores, microbial proliferation, and inflammation. Growing concerns regarding the adverse effects of synthetic anti-acne formulations have increased interest in herbal and naturally derived skin-care products. The present study focuses on the assessment and development of an anti-acne herbal facial scrub formulated from plant-based ingredients known for their keratolytic, antimicrobial, anti-inflammatory, and antioxidant properties. Selected herbs such as neem (*Azadirachta indica*), turmeric (*Curcuma longa*), green tea (*Camellia sinensis*), basil (*Ocimum sanctum*), and natural exfoliants like walnut shell powder or oat granules were incorporated into a mild, gel-based scrub. The formulation was evaluated for key physicochemical parameters including pH, viscosity, spreadability, stability, particle size distribution, and microbial load. Functional assessments such as exfoliating efficiency, sebum-reduction capacity, and anti-acne activity against *Propionibacterium acnes* and *Staphylococcus aureus* were performed. Patch testing on volunteers indicated good dermal compatibility with no significant irritation. Results showed that the optimized herbal scrub exhibited effective exfoliation, reduced oiliness, minimized comedone formation, and demonstrated notable antimicrobial activity, validating its potential as a safe, natural, and effective alternative to synthetic acne-care products. This study establishes a scientific basis for the use of herbal ingredients in topical anti-acne formulations and supports the development of eco-friendly, affordable, and consumer-safe skincare solutions.

**Keywords:-** . Anti-acne, Herbal facial scrub, Acne vulgaris, Herbal extracts, Natural exfoliants, Phytochemicals, Skin care formulation, Antibacterial activity, Anti-inflammatory herbs.

## Introduction:-

The Greek word "kosmos" is where the word "cosmetics" originates. It depicts any aspect of tidying up, glittering, captivating, or meticulous appearance as something that is meant to be applied to the human body via rubbing, pouring, sprinkling, spraying, or other means. Herbs have been used for their purifying and beautifying properties since ancient times. There are numerous varieties of cosmetics, and each one has a purpose for the skin. Of all the body parts, the skin is the largest. It controls temperature, exchanges water, lubricates, and offers protection. There are several reasons why the skin does not become hot or dull. By using a scrub, this can be resolved effectively. The skin is treated with two kinds of scrubs: body

and face scrubs. Because face scrub oils do not do a good job of exfoliating dead skin cells, people use them a lot.

Three categories exist for skin types: sensitive, oily, and dry. Because of the dead skin cells removed during regular use, skin will appear smooth and glowing. By applying the topical medication directly to the lateral skin, skin exposure to external agents can be avoided. The correct foundation allows for the modification of makeup such as face packs, face creams, sunscreens, and face scrubs. You can use a tiny makeup pad or just the sink to apply scrubs. When using the peeling gel, it is advised to massage it gently. This enhances blood flow and encourages skin surface oxygenation throughout. Probably the world's oldest pharmaceutical system is found in India's Chinese herbal medicine industry. The Vedas, an ancient Indian religious text, highlighted the use of ancient herbal remedies in their history of medicinal use. Herbs and other natural products are used to treat health issues in Ayurvedic and Unani traditional medicine. For Western therapists and physicians, these cottage cheeses, honey, milk, gee, and sugar moisturise and bleach herbal remedies. Even today's prescribed medications contain plant extracts, despite their apparent novelty. Presently, this form of traditional medicine is valued in many nations, and the high demand for Indian herbal medicine has resulted in its explosive growth, with an approximate annual growth rate of thirty percent. executing. Global demand for skin care products, herbal remedies, and even cosmetics has grown dramatically in recent year. [1]

## 2.Review literature:

1. **Dhanshree Dilip Gavali, et al "formulation and evaluation of herbal scrub"** For the healthy and nourish skin periodic cleansing requires which removes the dirt, dead skin, sebum other secretion Extends the skin and their appendix by chemical topical application. This is useful for making skin charming and beautiful. Cosmetic plays very important role in everyone's life to make joyful skin. Nowadays herbal cosmeceuticals are in demand due to less or no side effect. Hebalcosmeceutical usually contain plant part which posses antimicrobial, antiaging, antiacne, antioxidant property.

2. **Mr.chavhan Shankar parmashwar et al "review on cosmetic science preparation and evaluation of herbal scrub"**- The Drugs and Cosmetics Act, 1940 is an act of the Parliament of India which regulates the import, manufacture and distribution of drugs in India. The primary objective of the act is to ensure that the drugs and cosmetics sold in India are safe, effective and conform to state quality standards.] The related Drugs and Cosmetics Rules, 1945 contains provisions for classification of drugs under given schedules and there are guidelines for the storage, sale, display and prescription of each schedule. This act was originally known as the Drug Act and was passed in 1940.Schedule H: The drug label must display the texts "Rx" on the left top corner of the label and "Schedule H drug. Warning: To be sold by retail on the prescription of a Registered Medical practitioner only" prominently. It can only be supplied to licensed parties. It cannot be sold without a prescription and only the amount specified in the prescription should be sold.

3. **Dr.PanaskarA.N, et al "Formulation & Evaluation of Poly- Herbal Face Scrub for Skin Exfoliation"**:-The purpose of this study is to create and assess a Polyherbal face scrub that may be used as an alternative to chemical products. Natural ingredients are used in herbal cosmetics because they have the ability to work against wrinkles, acne, and o regulate the flow of oil from the skin's open pores. Natural elements are the safest and greatest products to use in everyday life since they have no negative effects, and these cosmetics also benefit the environment.

4. **GavhaneRituR,et al "Formulation and Evaluation of Polyherbal Facial Scrub"**: Cosmetics are defined as products used for the purpose of cleaning, beautifying, enhancing attractiveness, or changing the appearance. Plant-based cosmeceuticals usually contain some of the plants with antibacterial, antioxidant, and anti-aging properties. Herbal cosmetics are the safest everyday products with no side effects, and cosmeceuticals are products that affect the biological function of the skin.

5. **Swati Siddheshwar Londhe,et al "Formulation And Evaluation Of Polyherbal Face Pack"**: Turmeric contains antioxidants and anti-inflammatory components. These characteristics may provide glow and luster to the skin. Turmeric may also revive your skin by bringing out its natural glow Anti-Bacterial, Anti-septic, improve skin colour. Sandalwood oil contains antioxidants that help maintain the buoyancy and structure of the skin cells. It also reduces dryness and replenishes the moisture in skin, increasing elasticity. "Due to the rich antioxidant component, sandalwood can help prevent wrinkles by fighting free radical formation,

6. **Mr. Vishal Ashok Chaudhari, et al "Formulation And Evaluation Of Multipurpose Herbal Scrub In Gel Form Using LimoniaAcidissima"**: A Scrub is selected based on the skin type Excessive Scrub and rubbing can damage the skin, Do not Scrub skin if any open wounds, cuts, and sunburns present, Apply twice a week, Apply with a rotating motion to face and neck for about 30secs., Thoroughly rinse with water

### 3. History Of Cosmetics:

Comprised blends of chemicals obtained from artificially generated or naturally occurring sources. Cosmetics are used for a variety of things. The body or skin can be cleansed or protected with products made for personal hygiene and skin care. Makeupcosmetics intended to improve one's appearance, can be used to cover up flaws, accentuate one's natural features, like eyebrows and eyelashes, add color to the face, or completely alter the appearance of the face to resemble a different person, animal, or object. It is also possible to create cosmetics that give the body a scent.

These days, cosmetics are a hot commodity and are seen as necessary for everyday living. Following World War II, there was an increase in the acceptance of cosmetics in daily life. Social scientists and medical professionals discovered that cosmetics have psychological impact on users, particularly on the skin, in addition to being beautiful. They prevent wrinkles from appearing sooner by keeping the skin supple. Additionally, they help prevent sunburns and skin infections.

Ancient Egyptians and Sumerians were among the first people to use cosmetics thousands of years ago. Throughout Europe, the use of cosmetics persisted into the Middle Ages, when the face was made whiter and the cheeks redder. Nevertheless, opinions on cosmetics changed over time, with the use of cosmetics being publicly disapproved of at several points in Western history. Even though social attitudes toward cosmetics have changed, many people have occasionally used makeup to achieve ideals of appearance. Some early significant advancements in cosmetics include the following, per one source:

- Ancient Egyptians utilized kohl
- Castor oil was also utilized as a protective balm in ancient Egypt.
- The Romans described skin creams containing olive oil, rose water, and beeswax.
- In the nineteenth century, lanolin and vaseline.

Generally speaking, cosmetics are applied externally to the body's external regions as preparations. To put it another way, they can be used on the skin, hair, and nails to provide protection, color, softening,

cleansing, waving, setting, mollification, preservation, removal, and waving again. To categorize the cosmetics, there are 41 main categories:

1. Skincare Cosmetics
2. Hair Cosmetics
3. Nail cosmetics.
4. Hygiene-Related Cosmetics (Bathing, Dental, etc.)

❖ **Cosmetics for the Skin:**

Cosmetics are applied to many areas of the body, with the face being the most significant. The skin covers a large area of the body. The formulation of the skin care products results in solids, semi-solids, and liquids. Compactions or powders with varying flow rates and angles of repose make up the solids. Semi-solids can be either simple admixtures or emulsions, while liquids can be either monophasic or biphasic. [2]

❖ **Drug and Cosmetic Act 1940 and 1945**

This law was originally known as the Drug Act when it was passed in 1940. Adopted in 1945 were the pertinent Drugs Rules. When it was originally passed in 1940, the act-now known as the Drugs and Cosmetics Act of 1940-saw several revisions. According to the law, any product meant for application on the skin with the intention of improving, purifying, or beautifying it qualifies as a "cosmetic." In 1964, the statute was amended to include provisions for Ayurvedic and Unani medicines. Section 22 describes the requirements for drug inspectors, and Section 23 lays out the Section 16 of the act lays out the quality standards for pharmaceuticals. Part 17 provides a definition for "misbranding." Misbranded medicines are those that give the impression of having greater therapeutic benefit than they actually do. It is possible to ask the manufacturer of such a medication to stop producing it under Section 18. Section 27 deals with tainted or fraudulent drugs. The law requires a list of additional drug ingredients on the label. strict guidelines they must adhere to when conducting any raids. The Pharmaceuticals and Cosmetics Rules, 1945, include guidelines for prescribing, exhibiting, storing, and selling medications in accordance with the schedules that are currently in circulation. Rule 67 contains an explanation of license terms. Rule 97 includes the Labeling Guidelines. Schedule D: Enumeration of medications exempt from import regulations. List the approved colors and pigments for use in cosmetics and soap in Schedule Q. A number of regulations for machinery, buildings, getting rid of waste, and manufacturing are included in Schedule-M [3]

❖ **Penalties under the Drugs and Cosmetic Act for the Sale, and manufacture of drugs:** Making, selling, stocking, exhibiting, or offering for sale or distribution are all examples of actions that any of the following individuals may take on their behalf. Any drug that is found to be spurious under Section 17 B or adulterated under Section 17 A, or that, when used by anyone for the treatment, diagnosis, mitigation, or prevention of any disease, is likely to cause significant harm to their body or to result in their death under Section 320 of the IPC based only on a report that the drug is adulterated, is subject to a specific period of imprisonment.

❖ **A license to import and export cosmetics into India and overseas must be obtained subject to the following requirements:** An import license application must follow the guidelines in Rule 24 in order to be granted. This is in accordance with the Drugs and Cosmetics Act of 1940 and the Drugs and Cosmetic Rules of 1945. An import licence will be issued by the licensing body upon fulfilment of all requirements. The three years following its issue are when the import license is eligible for consideration for a grant. The licensing body will grant an import license once all conditions are satisfied. The import license has a

three-year validity period after it is issued. The import, production, distribution, and sale of pharmaceuticals are regulated in India by the Drugs and Cosmetics Act of 1940 and the Drugs and Cosmetic Rules of 1961.

#### 4. Benefits of scrub :-

**1] Cleanses Your Skin:-** The primary advantage of using a facial scrub is the elimination of dead skin cells from your face. Your face appears dry and depressing due to the dead cells in your skin. Your skin's pores become clogged by these too. After washing your face, your skin is thoroughly exfoliated to get rid of dead skin cells.

**2] Clears Skin Pore Blocks:** The body naturally produces sebum, an oil, to maintain the skin's moisture content. However, on rare occasions, production may reach an excess, in which case the extra sebum oil is stored in your skin's pores. Entrapment of the skin pores instead of their expulsion into the environment is the cause of skin breakouts. Shedding helps get rid of sebum oil and unclogs skin pores.

**3] Provide Smoother Skin:** In addition to the previously mentioned benefits, face scrubs also leave your skin feeling silky and radiant on the outside. Your self-esteem is actually going to increase when you face things with more ease, softness, and shine. Boost skin absorption by improving skin texture. Compared to other body parts, the skin on the face is more sensitive, thinner, and prone to injury. Skin that is unpleasant and gloomy can be caused by improper skincare, contamination, etc.

**4] Evacuates Flakes:** Dry patches of skin are a common concern. These dry skin patches are called drops. Not only are these unpleasant, but they also give the skin a very gloomy appearance. Using a facial scrub to exfoliate your face can help get rid of flaky skin and smooth it out.

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#### ❖ Ideal Properties of Exfoliant.

1. Not harmful
2. Have tiny grit particles in them
3. Gentle abrasive
4. Not agitating
5. Removes dead

#### 5. Anatomy Of Skin:

The skin, hair, nails, and glands make up the integumentary system, which is the largest organ. Every 28 days, new cells are added to the epidermis to renew it. This layer has a thickness of between 0.05 and 0.1 mm.

A) Skin

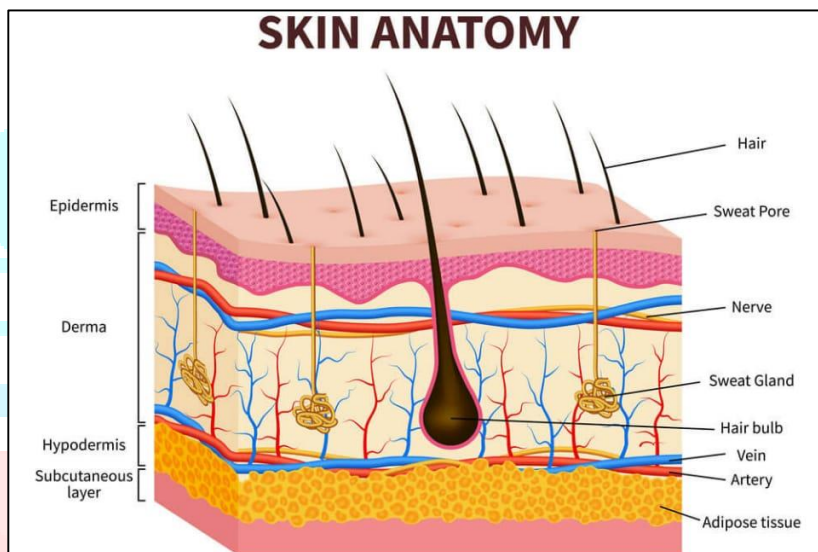
B) The dermis



### C) Subcutaneous fat.

Face skin is cleansed, exfoliated, and hydrated with a cosmetic product called a facial scrub. Sensitive, oily, and dry skin types are the three categories. Those with dry skin should first use a cleanser that contains moisturizer to wash their faces before applying moisturizer. It is advised to gently scrub delicate skin. For oily skin types, a deep-exfoliating scrub is necessary to prevent clogged pores and regulate oil production.

As rice scrub is made by hand using only natural ingredients, there is no particular method involved in its preparation unlike other products. What is left to do is mix the different ingredients carefully and deliberately until we have a flawless mixture that we can refer to as scrub. We might refer to different types of scrub as alternatives. A dull complexion can result from dead skin cells building up on the skin's surface. This is where exfoliation-more especially, using a face scrub-might be helpful. Your complexion can get better when the accumulation of dead skin cells on the skin's surface is removed. [6]



### 6.Skin Type:-

**1]For Oily Skin:** Due to excess sebum oil clogging their skin pores, people with oily skin often struggle with acne. Therefore, a face scrub with anti-pimple qualities in addition to removing dead skin cells is required. Salicylic acid is well known for its anti-acne properties. A face cleanser containing salicylic acid or other anti-acne ingredients is recommended if you have oily skin.

**2]For Dry Skin:** Any facial cleanser containing ingredients designed to remove dead skin cells can be used by anyone with dry skin. One such substance that quickly removes dead skin cells and flaky skin is glycolic acid. It is well-known for being a powerful exfoliator. To improve and hydrate skin, look for a face scrub that contains glycolic acid.

**3]For Sensitive Skin:** People with sensitive skin ought to choose skincare products with extra care. An antibacterial and anti-inflammatory face cleanser is the best choice for people with sensitive skin. Propylene glycol exhibits resistance against both bacteria and fungi. Turmeric and yoghurt are two organic foods that have anti-inflammatory properties. Sugar scrubs are considered beneficial for sensitive skin. Dead skin cells can be easily removed by using sugar, a natural skin exfoliant. Choosing a face scrub can be challenging if you have combination skin, which is a combination of oily and dry skin. But to get rid of extra oil without irritating the skin, experts suggest using a face scrub for people with mixed skin. There are numerous benefits to exfoliating your skin:

**4] For skin that is crystal clear:** Scrub away perspiration, oil, and debris. In actuality, not all of the dust that has gathered in your skin's pores can be eliminated by face cleanser, face wash, or cleaning milk. In this case, cleaning works well.

**5] Get rid of flaky skin:** Flaky skin contributes to dry patches on the body. It allows dead cells to build up over time. Keeping your skin clean will help you manage flaky skin more successfully. aid in removing any dead cells Dead cells cause your skin to look tired and drab. Take them off with a light scrub. Enhance Skin Glow You can really see a glow to your skin after exfoliation. Your skin can truly reflect light when you exfoliate it. Eliminate any dark patches. If you want results, use scrub twice a week. Particularly useful for knuckles, elbows, and knees removing acne scars Acne scar removal is aided by exfoliation. aid in preventing hair from growing ingrown In grown hairs are a perennial problem that can be avoided by scrubbing.. [7]

## **7. Aim and Objective:**

**Aim: Assessment and Development of Anti -acne herbal facial scrub Objective:**

1. Assists in Eliminating Dead Cells: Body or facial scrubs are cosmetics that work beneath the surface to eliminate dead skin and expose healthy, radiant skin beneath.
  2. Release the skin's structure Flakes: The term "flakes" refers to the loss of the epidermis, the top layer of skin.
  3. Face scrub contains coarse particles helping you to exfoliate the skin. After you apply a face scrub, the particles rub against the skin helping in removing all the dirt. It also makes your skin smooth and soft
  4. Refreshes your skin
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## **8. Ingredient Information (Formation Table)**

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Sr.no.	Ingredients of facial scrub	Category	Quantity[30gm]
1]	Orange pill powder	Oil remover ,Dust Remover,Cleanser	7.5gm
2]	Vitamin E [capsule]	Antioxidant	3ml
3]	Sandalwood Powder	Moisturizer	3gm
4]	Honey	antiseptic	7.5ml
5]	Neem Powder	Skin conditioner ,antiseptic	1.5gm
6]	Turmeric	Improves fairness,darks spot remover.	1.5gm
7]	Fullers Earth[Multani Mitti]	Oil absorber	3gm
8]	Methyl Paraben	Preservative	1ml
9]	Distilled water	Vehicle	Q.S
10]	Glycerin	Viscosity enhanser	Q.S
11]	Almond oil	Nutritive,Emolient	1ml

## 9. Ingredients For Formulation:-

### 1]Orange Peel (Citrus sinensis):-

To differentiate it from Citrus aurantium, which is closely related to it and is often referred to as bitter orange, it is frequently called sweet orange. Orange peel contains B-carotene, an antioxidant powerhouse that moisturizes, balances, and softens skin. The body converts B-carotene into Vitamin A. Orange peel moisturizes and invigorates oily skin.

- ❖ **Synonyms:** bitter orange peel, China Orange, Bigarade Orange, Seville Orange, Orange cortex.
- ❖ **Biological Source:** Citrus aurantium Linn.'s peel is made up of both fresh and dried pericarp outer parts.



- ❖ Rutaceae is the family. [8]



Fig no 4.1: Orange Peel (*Citrus sinensis*)

## 2] Multani Mitti:

These easily accessible mittis reduce the size of pores, eliminate whiteheads and blackheads, lighten freckles, soothe sunburns, cleanse the skin, enhance blood flow, improve complexion, lessen acne, and give the skin a radiant appearance because they are packed with healthy nutrients. The greatest natural source of magnesium chloride is multanimitti.

- ❖ **Synonyms:** Earth of Fuller
- ❖ **Biochemical Origin:** Hydrous aluminum silicate (clay minerals) makes up the source.
- ❖ **family:** Morgantonite
- ❖ **Chemical constituents:** limonene, Ethyl butanoate [9]



Fig n0 4.2 : Multani mitti

### 3] Almond oil:

Almond oil Oil in scrubs adds a great deal to the cosmetic effect while also being a comfort and lubricant during application. Additionally, they might offer subtlety and brilliance. Many different types of soaps, creams, lotions, shampoos, and other cosmetic products contain olive oil as a primary ingredient. But on its own, it can also strengthen weak and brittle nails, moisturize and nourish dry skin and chapped lips, and rejuvenate and beautify hair and scalp.

- ❖ **Biological source:** the seeds of *Prunus amygdalus* (rosaceae) vars. *dulcis* (sweet almonds) or *p. amygdalus* var. *amara* (bitter almonds) are the source of almond oil, which is a fixed oil.
- ❖ **Family:-** Rosacea
- ❖ **Synonyms:** (Sweet Almond) Oil

**Chemical constituents:** Oleic acid, (35-72%), linoleic acid [10]



Fig no 4.3 : Almond oil

### 4] Neem:-

It is used as a toner, blemish remover, and blackhead remover. It also balances the skin's oil production and helps to protect the skin from sun damage. It has fatty acids that tighten skin and can help lessen the appearance of aging, along with vitamin E. Additionally, neem possesses antibacterial and anti-inflammatory qualities that may soothe irritated skin. It also has the benefit of cooling the skin and can be used to treat skin sensitivity

- ❖ **Synonyms:-** margosa, Nimtree
- ❖ **Family:** Meliaceae
- ❖ **Biological Source:-** fresh or dried leaves and seed oil of *azadirachta indica*

**Chemical constituents:** azadirachtin and nimbolinin, nimbin. (11)



Fig no 4.4: Neem

### 5] Honey;-

The anti-bacterial and anti-inflammatory effects of honey play an important role in reducing acne and breakouts. The bacteria that causes blackheads, whiteheads, and pimples is lessened by these characteristics. They also aid in treating the inflammation and redness brought on by breakouts. Singing it over your face helps get rid of dead skin cells that give you dull-looking skin. This may make skin look more radiant. Once your face has been cleaned with soap and water, use manuka honey or any other raw, unpasteurized honey on it.

- ❖ **Synonyms:-**Madhu, Madh, Mel.
- ❖ **Family;-**Apidae
- ❖ **Biological Source:-**Honey is sugary substance deposited in the honey comb by the hive bee *Apis mellifera* and other species of *Apis* belonging to the family *Apidae*

**Chemical constituents:**B vitamin ribloflavin,niacin, folicacid.ascorbic a;cid.[12]



Fig no 4.5: Honey

#### 6) Turmeric:-

Turmeric contains antioxidants and anti-inflammatory components. These qualities might give the skin a sheen and shine. Turmeric may also revive your skin by bringing out its natural glow.

- ❖ **Synonyms:-**Saffron Indian, Haldi, Curcuma
- ❖ **Family:-**Ginger family Zingiberaceae
- ❖ **Biological Source:-**Turmeric is the dried rhizome of *Curcuma longa* linn.

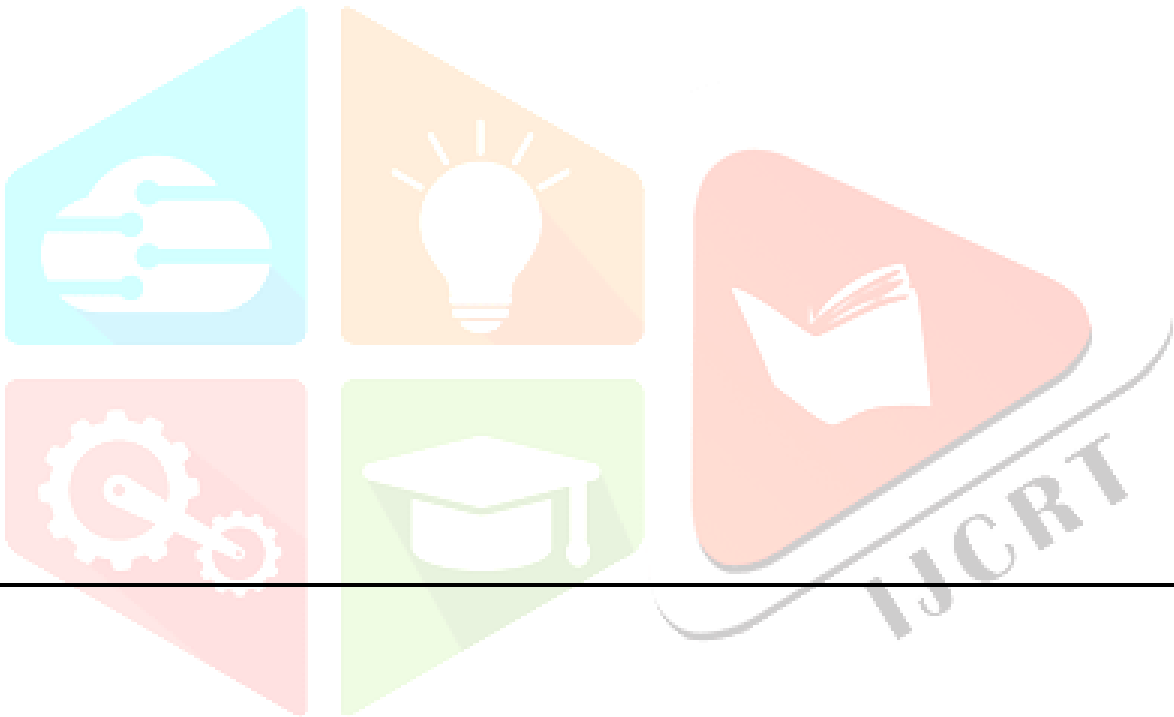
**Chemical constituents:** curcumin(CUR), demethoxycurcumin(DMC)



Fig no 4.6: turmeric



11. Experimental work:





1]Weigh each ingredient individually with accuracy.



2. Fill a mortar and pestle with the powdered orange pill, sandalwood, turmeric, neem (extract), methyl paraben, and Multanimitti.



3. Finally, triturate until well mixed, then transfer to a beaker.



4. Transfer the contents of one beaker to another, adding honey, water, and vitamin E oil in the amounts specified in the formula. Stir thoroughly.



5. After adding the triturate mixture to a second beaker and adding enough glycerin, the scrub is finally ready.



6.Add our herbal scrub to the proper container[14]

## 11. Evaluation Parameters of Herbal Scrub:-

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**1.Organoleptic Properties:** An examination was conducted into the color, taste, smell, and appearance of Herbal Scrub.

**2. Texture and Homogeneity** To see the uniform, a less amount of the prepared scrub was rubbed between the thumb and index finger. [15].

**3. Measurement of pH:** A digital pH meter was used to measure the pH of the herbal scrub.[16]

**4. Patch test:** Patch tests are a tried-and-true way to identify hypersensitivity and find out whether a substance might cause an allergic reaction on the skin. In a patch test, the formulation's skin reaction is seen in two to three days[17].

**5. Spreadability:** A tiny quantity of scrub was put on one glass slide, and another glass slide was placed on the gel. After measuring the area and waiting for the scrub to spread, a 20g wooden weight was placed on it. The scrub's quantity and area on the glass slide indicate how well it spreads.

- $S = m \times 1/t$  S=Spreadability
- m-Weight placed on the slide
- l=Length of the glass slide
- t-Time taken in seconds[18]

**6. Irritability:** A small amount of the scrub was applied to the skin's surface and left on for a short while. [19]

**7. Washability:** The skin was lightly scrubbed before being given a water wash.

**8. Grittiness:** Grittiness was examined by hand[20]

### 13.Conclusion:-

The formulation of a herbal face scrub was assessed according to several criteria. The formulation appeared to have passed the tests based on the results. The prepared multi-herbal formulation cleans, nourishes, and protects the skin from acne, pimples, and premature aging. It also leaves the face feeling fresh and clean after cleaning. The results indicate that the new scrub formulation is safe to use. Since most of the ingredients are natural, there is little possibility of negative side effects. It works well on all skin types, including normal, oily, and dry.

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