

Formulation & Evaluation of Herbal Face Scrub

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Abstract: The main objective of present study was to prepare a polyherbal scrub incorporated into gel. The use of natural ingredients to fight against acne, wrinkle and also to control secretion of oil is known as natural or herbal cosmetics. Herbal cosmeceuticals usually contain the plant parts which possess antimicrobial, antioxidant and anti-aging properties. Herbal cosmetics are the safest product to use routine with no side effects and cosmeceuticals are the product which influences the biological function of skin. In this preparation fenugreek, coffee, coconut oil, rose water, turmeric, Aloe Vera gel, amla, honey, sodium lauryl sulfate, methyl parabens, glycerine is used as active ingredients and incorporated into the gel which is prepared with carbopol of different The main objective of present study was to prepare a polyherbal scrub incorporated into gel. The use of natural ingredients to fight against acne, wrinkle and also to control secretion of oil is known as natural or herbal cosmetics

Keywords: Antiseptic, Anti- Infective, Antioxidant, Anti- aging and humectant, etc

I. INTRODUCTION

Facial scrub is a cosmetic or a beauty product or a treatment which cleanses and exfoliates the skin of the face or body. Facial scrubs are beneficial to remove dirt, skin cells and sebum or oil, blackheads and Whiteheads. It helps to maintain skin appearance. There are three kinds of skin types, oily skin, sensitive skin and dry skin. For a person with dry skin must use the facial scrub, which contains the moisturizing and hydrating ingredients. If the person is having sensitive skin, he or she should use gentle scrub. And the person with oily skin should be using an exfoliation which prevents pimples dullness and breakouts and helps to control oiliness. Depending on the skin types facial scrubs are advised to use twice or thrice a week. But for the newbies, facial scrubs are recommended to use weekly. People with dry or sensitive skin types should only exfoliate one or two times a week. In some conditions, peoples with acne prone skin are recommended to use products containing salicylic acid and dermatologist-grade 4% glycolic and polyhydroxy acid complex. This helps to exfoliate skin and clear acne with giving smoother appearance.

BENEFITS OF SCRUBBING SKIN

1. Helps in Removing Dead Cells: Facial or body scrubs are the cosmetic which goes beyond surface level to remove dead skin and reveal the healthy glowing skin below.
2. Free the skin from Flakes: Loss of upper layer of skin (epidermis) is called as flaky skin. It gives rise to dry patches. Scrubbing your skin can help you to deal with flaky skin effectively.
3. Deep Cleaning of Skin: Scrubbing your skin helps skin to get free from dirt, oil and sweat. Other cleansing like face wash facial cleansers cannot clean the skin.
4. Thoroughly removing dust accumulated in the course of the skin, scrubbing does this work effectively.
5. Clears Blemishes: Accumulation of dead skin, can block the pores of skin and causes blemishes. Scrubbing frequently helps to remove dead skin and clears blemishes.
6. Gives glow to skin and smooth texture: Scrubbing actually helps to give glow and smooth texture to skin.
7. Remove the Acne Scars: As scrubbing used to remove dead skin cells, it also remove the acne scars from skin.
8. Promotes Hydration of Skin: Facial scrubs contents moisturizing agents and hydrating Agents. Exfoliation of skin helps to absorb moisture and it leaves our skin with filling soft and .
9. Reduces Stress: Exfoliation or scrubbing the skin gives good massage, which gives relaxing feeling and reduces stress.



Facial scrubs are solid or semisolid systems of at least two constituents, containing various natural and chemical ingredients which are safer to use and having fewer side effects and they also possess antiseptic, anti-infective, antioxidant, anti-aging and humectant properties.

The scrubs are made by simple mixing methods of two or more ingredients herbal or chemical such as honey, aloe vera, turmeric powder, Glycerine, Coffee powder, lauryl sulphate, anhydrous citric acid, etc.

LITERATURE REVIEW :

1. Skin care with herbal exfoliants :

(Nilani Packianathan, Ruckmani Kandasamy : Skin Care with Herbal Exfoliants, Functional Plant Science and Biotechnology 2010;5(1):94-97) The given article gives the different types of exfoliation methods such as manual or mechanical skin exfoliation, chemical exfoliation, enzyme exfoliation. The formulation is from luffa, algae extract, grapefruit seed extract, apricot shell, cucumber extract, papaya extract, mung dal, pineapple extract, rosehip seed powder, cranberry, green tea, tree tomato. Herbal skin exfoliation is an important part of general skin maintenance. It smoothes and chemically balances skin, unclogs pores and stimulates fresh cell growth, reducing blemishes, discoloration and wrinkles which helps the skin stay healthy and clean, hydrated and blemish-free.

2. Formulation and evaluation of multipurpose herbal scrub in gel from using limonia acidissima:

(Mr. Vishal Ashok Chaudhari, Dr. Manoj V. Girase, Mr. Bhushan Gulab Borase, Mr. Shashikant Kailas Bhoi, Miss. Kalyani Ashok Chaudhari: Formulation and Evaluation of Multipurpose Herbal Scrub In Gel Form Using Limonia Acidissima, International Journal of Research and Analytical Reviews 2020;7) The formulation is based on herbal scrub using limonia acidissima. The objective behind the study was to prepare multi-purpose herbal scrub in the form of gel that are used for their medicinal and cosmetic properties and limonia acidissima is one of them. The valuable part of the plant includes its roots, fruits, bark and leaves which are used for various therapeutic purposes. Extraction of fruit parts was done and incorporated into the gel phase. The formulation contains ethanol extract of Limonia acidissima fruit pulp which possesses antioxidant, anti-aging, anti-wrinkle, skin tightening, lightening and brightening properties. They can exfoliate skin without scratching the skin surface by applying pressure on them. Suitable base materials such as gelling agents, preservative, neutralizer and foaming agents were selected and incorporated into the extract to design a suitable herbal gel. The formulation was evaluated using various parameters and found to be satisfied upon application to skin.

3. Clinical review of deep cleansing apricot scrub: An herbal formulation:

(Debbarma Dona, Moharana PK, Mishra Baidyanath, Ramana Vivekananda and W Dimple: Clinical Review of deep cleansing apricot scrub: An Herbal Formulation, International Journal of Bioassays 2015;4(9):4251-4253) Exfoliation to your skin care routine helps the natural shedding process of skin and encourages healthier, smoother, more even-toned skin. Some of the big beauty benefits like acne prevention, smaller pores, wrinkles, etc. Herbal medicines have been extensively used in recent years for chronic and lifestyle-related disorders. Deep cleansing apricot scrub is a proprietary & patented polyherbal formulation designed to deep cleanse the skin and make it healthy and glowing. Exfoliation involves the removal of the oldest superficial dead skin cells on the skin's outermost surface. Exfoliation can be achieved through mechanical or chemical means. Mechanical process involves physically scrubbing the skin with abrasive.

4. Antioxidant facial scrub from red dragon fruit extract :

(Ligaya Taliana : Facial Skin Health: Antioxidant Facial Scrub From Red Dragon Fruit Extract, Journal of Asian Multicultural Research For Medical and Health Science Study 2020;1(2):01-05) Air pollution and UV rays are sources of free radicals that are harmful to the body. Radicals produced in the body can be neutralized by antioxidants that come from the body under normal circumstances. Free facial scrub is a skin care [8] cosmetic product that contains coarse granules or so-called abrasive cosmetics which function to remove dead skin cells and nourish the skin. This type of facial treatment is a type of treatment generally chosen by some women. Facial is a procedure to clear facial skin from all types of facial treatment impurities. Such as pimples, whiteheads, blackheads and others.



Face scrub description.

There are two types of facial soap

1. Face wash.
2. Face Scrub.

Facial wash is used to clean the face from dirt and dust. Facial scrubs are used to help exfoliate dead skin cells. Scrub functions to remove dead skin cells on the surface of body's skin which is rough and dull

AIM & OBJECTIVE :

Formulation and evaluation of herbal face scrub.

Objective

- To formulate the multi herbal face scrub.
- To exfoliate the skin and get rid of dead skin cells and other impurities from surface of the skin.
- To give various effects in one formulation.
- To evaluate the various parameter to the formulation.
- To formulate the cost-effective face scrub.
- To formulate safe dosage form.

LITERATURE REVIEW :

on the formulation and evaluation of polyherbal handwash explores the use of multiple herbal extracts combined to create a handwash with enhanced antimicrobial and skin-friendly properties. Studies have focused on various aspects, including ingredient selection, extraction methods, formulation techniques, and evaluation of antimicrobial activity, physical characteristics, and stability.

Key Aspects of Polyherbal Handwash Formulation:

Herbal Extracts:

Research explores the use of various herbal extracts, including neem, tulsi, lemon, aloe vera, ginger, and others, known for their antimicrobial and skin-soothing properties.

Extraction Methods:

Hydroalcoholic and methanolic extractions are commonly used to extract active compounds from herbal materials.

Gelling Agents:

Carbopol 940 and other gelling agents are used to create a gel-like consistency for the handwash.

Surfactants:

Sodium lauryl sulfate and other surfactants are incorporated to provide foaming and cleaning properties.

Preservatives:

Methyl paraben and other preservatives are used to ensure product stability and prevent microbial contamination.

Evaluation Parameters:

Evaluations include antimicrobial activity testing, pH, viscosity, foaming, and stability studies.

Antimicrobial Activity Evaluation:

Zone of Inhibition Test:

Agar plate tests are used to assess the antimicrobial activity of the handwash against bacteria like *Staphylococcus aureus*, *Bacillus subtilis*, and *Escherichia coli*.

Microbial Growth:

The handwash formulation is tested against various microorganisms to determine its effectiveness in inhibiting microbial growth.



Physical and Chemical Evaluation:

pH:

The pH of the handwash is measured to ensure it is within a safe and effective range for skin.

Viscosity:

Viscosity tests determine the consistency and flow properties of the handwash.

Foaming and Foam Retention:

Evaluations assess the ability of the handwash to produce foam and maintain it over time.

Stability Studies:

The handwash is stored under different conditions to evaluate its stability and resistance to changes in color, odor, and other characteristics.

Benefits of Polyherbal Handwash:

Natural and Safe:

The use of herbal extracts provides a natural and safer alternative to chemical-based handwashes, potentially reducing skin irritation.

Enhanced Antimicrobial Activity:

The combination of multiple herbal extracts can create a synergistic effect, enhancing antimicrobial activity against a wider range of pathogens.

Cost-Effective:

Herbal extracts can be a cost-effective alternative to synthetic chemicals used in commercial handwashes.

Promotes Healthy Skin:

The inclusion of skin-soothing ingredients like aloe vera and other herbs can help to maintain skin health and prevent irritation.

PLAN OF WORK :

The goal of the current work was to revitalize the skin's tone and make it healthier by removing dead cells, debris, and impurities from the epidermis and dermis.

Searching of various literature regarding face scrub. Segregate the required literature.

Selecting appropriate research articles for face scrub. Survey for need of market.

Formulation of face scrub using various Multi Herbal Ingredients with the help of sophisticated equipments and instruments as per required procedure.

Evaluation parameter for face scrub Organoleptic properties-

Colour Odour Consistency

Homogeneity and texture

Washability pH Viscosity

Extrudability Spreadability Skin irritation

Comparison with the market.



PLANT PROFILE :

Tomato



Fig.3 Tomato

Common Name-Tomato plant

Scientific Name- Solanum Lycopersicon

Description- Species originated in South America. It was spread to Europe and the rest of the world by Spanish colonists since the discovery of America. It is a green bush with yellow flowers that produces red edible fruits.

Plant care- It needs water every two days to grow and produce fruit. It also needs direct sunlight.

Location- All over the world.

Uses- It's used as a food product because it is edible. It is used in salads, fried tomatoes, tomato sauces... and in lots of recipes around the world.

Chickoo



Fig.4 Chickoo

Common Name- Sapodilla

Scientific Name- Manilkara Zapota

Description- Chickoo has brown fuzzy skin and is more oval-shaped than its Central American cousins, though some develop pointed ends. The skin is inedible, but serves a purpose as a kind of bowl for the sweet flesh.

Plant Care- The soils varieties suitable for Sapota cultivation are deep alluvium, sandy loam and medium black soil. Sapota is a tropical fruit and needs warm, humid climate for growth and development.

Uses- Chickoo is an excellent source of antioxidants and helps with skin texture. Chickoo can make for excellent exfoliants when used with honey and sugar.



Neem



Fig.5 Neem

Synonym- Neem

Biological source- It consists of dried leaves of *Azadiracta indica* belonging to family Meliaceae.

Description Colour- Green Odour - Pungent Taste – Bitter

Plant care- Neem tree needs little water and plenty of sunlight. The tree grows naturally in areas where the rainfall is in the range of 450 to 1200 mm.

Uses- Treats acne. The antibacterial properties of neem fight acne-causing bacteria, which helps in the treatment and prevention of acne. Pacify irritated skin. Fight signs of ageing.

Aloe Vera



Fig.6 Aloe Vera

Synonym- aloe vera, burn plant

Biological source- dried latex of leaves of it also known as cape aloe belong to the family-Liliaceae

Description- Colour- clear to slightly yellow / translucent gold Odour-similar like rotten garlic or onion taste- Bitter

Plant care- Aloe vera are succulents, so they store water in their leaves. It is important not to overwater them – water whenever the top few centimetres of compost to dry out between waterings.

Chemical constituents- aloe emodin

Uses- heals burns and clears acne



Excipients Profile
Xanthan Gum

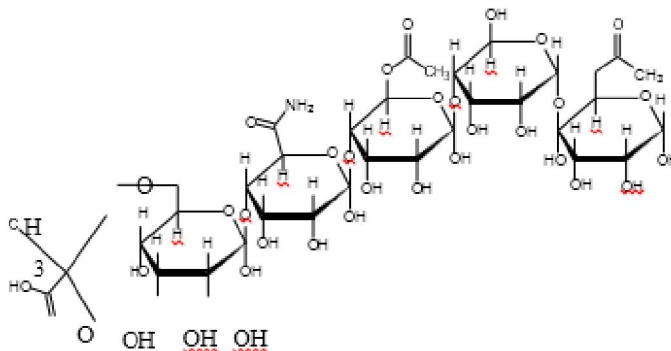


Fig.7 Xanthan Gum

Non-proprietary Names- BP Xanthan gum

Synonyms- Corn sugar gum

Empirical Formula Molecular Weight- The USP describes xanthan gum as a high molecular weight polysaccharide gum. It contains D-glucose and D-mannose as the dominant hexose units, along with D- glucuronic acid, and is prepared as the sodium, potassium, or calcium salt. The molecular weight is approximately 2 x 10⁶.

Description- Xanthan gum occurs as a cream or white-colored, odourless, free- flowing, fine powder.

Triethanolamine

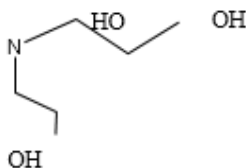


Fig.8 Triethanolamine

Description- Triethanolamine is an organic compound with the chemical formula N(CH₂CH₂OH)₃. It is a colourless viscous liquid. It is both a tertiary amine and a triol. A triol is a molecule with three alcohol groups. It is a colourless compound although samples may appear yellow because of impurities.

Uses- In pharmaceuticals, triethanolamine is the active ingredient of some eardrops used to treat impacted earwax. It also serves as a pH balancer in many different cosmetic products, ranging from cleansing creams and milks, skin lotions, eye gels, moisturizers, shampoos, shaving foams.

Sodium Lauryl Sulfate



Fig.9 SLS

Description- Sodium dodecyl sulfate (SDS) or sodium lauryl sulfate (SLS), sometimes written sodium laurilsulfate, is an organic compound with the formula CH₃(CH₂)₁₁OSO₃Na and structure H₃C-(CH₂)₁₁-O-S(=O)₂-O-Na⁺. It is an anionic surfactant used in many cleaning and hygiene products.



Uses- Sodium lauryl sulfate is a widely used in the pharmaceutical field as an ionic solubilizer and emulsifier that is suitable for applications in liquid dispersions, solutions, emulsions and micro emulsions, tablets, foams and semi-solids such as creams, lotions and gels.

Honey



Fig.10 Honey

Synonym- Shahad

Biological source -It consists of saccharine liquid prepared from the nectar of the flowers by the Honey-bee *Apis mellifica* belonging to family Apidae.

Description Colour- Yellow brown coloured liquid Odour - Sweet Taste – Sweet Chief chemical constituents- Dextrose and laevulose (70-80%) Dextrin proteins Uses- Good for wrinkles and aging Prevent acne Remove dirt from pores.



Rose Water



Fig.11 Rose Water

Rose water uses for different purposes like helps soothe skin irritation, soothes sore throats, reduces skin redness, helps prevent and treats infections, contains antioxidants, heals cuts, scars, and burns, enhances mood, relieves headaches, it has anti-aging properties, soothes digestion problems.

MATERIALS AND METHODOLOGY :

Chikoo powder	Skin beauty enhancer & exfoliator	1g	
Tomato powder	Antiacne, antiaging	1g	
Neem powder	Antioxidant, antimicrobial	1g	




			
Corbopol	Gelling agent	0.5g	
Xanthan gum	Gelling agent	0.5g	
Rice flour	Skin whitening agent	0.5g	
Potato starch	Natural scrubber		
Citric Acid	Preservative	1.5g	
SLS	Foaming	0.4g	
Aloe vera gel	Smoothering agent	0.5g	
Honey	Moisturizer	2ml	

Table No.2

Instrumental study

Sr. No.	Instruments used	Make and Model No.
1	Digital Balance	CONTECH Instruments Ltd.
2	pH meter	CHEMILINE and CL 180
3	Hot Air Oven	BIO-TECHNICS INDIA
4	Spreadability Tester	Model made at laboratory level.

Table No. 3

METHOD :

The multi herbal face scrub was made according to the formula presented below: Steps for preparation of multi herbal face scrub-

Step 1- Preparation of Mixture- 1

The chickoo pulp was scoop out from the raw chickoo and dried in hot air oven at 1000C for 2-3 hrs approximately.



Step 2- Preparation of Mixture- 2.

For F1, Xanthan Gum powder was used to prepare a gel base.

Step 3- Preparation of Mixture- 3

The appropriate quantity of SLS was dissolved in water and added to the Step 2 Mixture.

Step 4- Preparation of mixture-4

The remaining ingredients were added to the step 2 mixture along with the preservative, moisturizer and rose water.

Finally Step 3(SLS preparation) mixture was added to it.

EVALUATION PARAMETER :

Organoleptic Properties-

Colour- Odour

Consistency- Check grittiness, softness,

Homogeneity & Texture- it was tested by pressing a small quantity of formulated scrub between thumb and index finger.

Washability- This test was performed on neck region.

Grittiness- Gel was found to have Few gritty particles.

pH-Using a digital pH metre, the pH value of face scrub is determined. A pH reading is made by dipping an electrode into the appropriate gel formulation after one gramme of gel has been dissolved in 100 ml of distilled water and left to stand for two hours.

Spreadability- Keeping 1gm of sample between two transparent glass slides. The standard weight 20gm apply on upper glass of slide. It is calculated were,

S- Spreadability

m- Weightless on slide (1gm) t- Time taken in sec (22sec) L- Length of glass slide (7.5)

Skin Irritation- The scrub can be used sparingly and left on the skin for a short time and found to be non-irritant.

Extrudability – Small amount of gel was taken into a collapsible ointment tube. One end closed and the other end kept opened. Slight pressure was applied on the closed side. The time taken to extrude and the amount of gel extruded was noted. Stability Study- Stability of formulation can be tested by filling the scrub in plastic container. Placing it in humidity chamber at 45°C and 75% relative humidity.

RESULT AND DISCUSSION :

The face scrub was easy to apply and wash effectively on all skin types. The formulated face scrub was evaluated by different physical properties

Organoleptic Properties

Colour - Light Brown

Odour - Characteristic odour Consistency-Good Homogeneity & Texture- Washability

Little quantity of face scrub was applied over the skin and washed with water. It was easily washable.

Grittiness

Gel was found to have a few small gritty particles

pH

The measurements of pH of the formulation were done and it was observed that the pH of formulations F1 to F5 was found to be in the range of 6.9 to 7. From the values of pH, it is concluded that the face scrub was compatible with skin.

Spreadability

Spreadability denotes the extent of area to which the gel readily spreads on application to skin or the affected part. The spreading was expressed in terms of time in seconds taken by two slides to slip off from the gel, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides, better the spreadability. Two sets of glass slides of standard dimensions were taken. The gel formulation was placed over one of the slides. Spreadability of different scrub formulation were studied.



Measurement of spreadability

Samples	Spreadability (gm.cm/Sec)
1	5.33

Irritability

The formulated face scrub from F1- did not show any skin irritation when applied on the cheek area of group of 4 volunteers.

Stability Study

According to ICH guideline the formulation was kept in humidity chamber at 450C and 75% relative humidity which is under process.

II. CONCLUSION

From the recent years studies the youth move towards the herbal formulation over the synthetic formulation. There are various herbal cosmetics are available in market but youth focus for clean glossy skin and dirt removal formulation, so overcome on the problems regarding with skin like oily skin, blackheads on skin, dull skin we formulate the Face scrub with goodness of chickoo.

This study target for enhancing the face skin appearance by formulating multi herbal facial scrub which includes Chickoo, Neem, And Tomato

The combination of these herbal constituents produces an effect to minimize the Acne problem along with Antiaging, Antioxidant as well as antimicrobial effect.

The formulation results were appreciable and therefore, it may be considered as a best face scrub.

Overall, this study reports concluded that the formulation of multi herbal facial scrub may offer an effective which leads to patient adherence and compliance to the formulated product.

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