

Exotic Rejuvenation: Unveiling the benefits of Dragon Fruit in polyherbal scrub

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Abstract:

Facial scrubs contain coarse particles which help to exfoliate the skin. When you apply a face scrub, the particles rub against your skin and remove all the dirt from your skin pores. It also removes dead skin cells, making your skin smoother and softer. In this project we have prepared a polyherbal scrub which consists plant-based ingredients to improve skin cleansing, softening, moisture and evenness. In-house prepared polyherbal scrub mainly contains the dragon fruit seeds which act as antioxidant with its rich content of content of vitamin C. We also used tamarind outer cover to remove dead scales on the skin, papaya seeds as acne control, rice starch as a protecting agent and soothe sun damage, Vitamin E as anti-aging ingredient, liquorice to diminish dark circles. The scrub was prepared with the polyherbal ingredients with glycerine and carbapol gel. The scrub was evaluated for appearance, pH, consistency, spreadability, extrudability, viscosity, irritability, washability, grittiness, foamability and it was concluded that the scrub was found to be satisfactory to improve the appearance of skin without any side effects and after application of scrub, skin becomes softer, cleaner and refreshed.

Key Words: Scrub, Dragon fruit, Exfoliate, Tamarind Powder

Introduction:

The etymology of the word “exfoliate” comes from the Latin exfoliare (to strip off leaves). Cosmetics are products used to enhance or change the appearance of the face, fragrance or the texture of the body. Facial scrubs are an essential part of a skin care routine. A facial scrub is usually a cream-based product that contains little exfoliation pieces that when massage across the skin help smooth the skin by physically lifting of dry, dead skin cells. Facial scrubs also work very well to keep the skin on the neck to smooth to make exfoliation easier. When exfoliating, make sure to look upwards so the skin on the neck is nice and taut, which will make for easier use. Facial scrub is an excellent deep cleansing, exfoliating applications for all skin types and especially beneficial for oily skin. This all neutral facial scrub aids in removing impurities, dirt, contaminants and excess oil. This versatile combination can be used as facial scrub or a facial mask.⁽¹⁾ Using a facial scrub can make your skin feel beautiful, youthful, and soft and like it's glowing. Unlike regular soap or cleanser, a facial scrub uses small particles, beads or chemicals to get rid of the old skin cells and make way for new once in a process known as exfoliation. Facial scrub is very easy to use, choose a neutral or chemical scrub suited for skin, massaged on damp skin for one minute, and then rinsed skin. Repeated once or twice a week. With all of its benefits, making a facial scrub a part of weakly skin care routine. Exfoliation involves the removal of the oldest dead skin cells on the skin's outermost surface. Exfoliation is

involved in all facials, during microdermabrasion or chemical peels. Exfoliation can be achieved by mechanical or chemical means.⁽²⁾ The word cosmetics is derived from greek word - kosmos define as articles intended to be rubbed, poured, sprinkled or sprayed or introduce into or otherwise applied to human body or any part of cleansing, beautifying, promoting attractiveness or alerting appearance. From the ancient time different herbs are used for cleaning beautifying and to manage them. Cosmetics provides protection, water preservation, lubricates and regulate temperature. Skin becomes dull, non-glowing due to various causes and these can effectively the overcome with the application of scrub. Usage of oil is high in facial scrub due to which it is less abrasive it removes the dead skin cells and exfoliates the skin. Skin is classified into three types such as dry skin, oily skin and sensitive skin. On regular use of scrubs skin becomes glowing or smoother because dead skin cells are remove thereby exposing new skin cells. Formulations such as face pack, face cream, suntan cream and face exfoliant are prepared by incorporating suitable base. Scrubs can be directly applied on to the skin or can be applied with small cosmetic pad. Gentle massage is recommended on application of the scrub gel which helps to improve blood circulation and increases oxygen supply to all surface of the skin.⁽³⁾ A facial scrub uses small particles, beads or chemicals to get rid of the old skin cells and make way for new once in a process known as exfoliation. The agents are used for exfoliation are known as exfoliants. Exfoliating agents are

those used to remove dead cells present on the skin and boost blood circulation, giving renewed and glowing skin. It keeps face free from dust, grime and oils which are also beneficial in keeping a skin pore clean.⁽⁴⁾ The tamarind peel powder was used as exfoliant. The tamarind peel was taken into the mortar and triturate by using pestle.⁽⁵⁾ Air pollution and UV rays are Sources of free radicals that are harmful to body. Radicals produced in the body can be neutralized by antioxidant that come from the body under normal circumstances, free facial scrub is a skin care. Cosmetic product that contains coarse granules or so called abrasive cosmetics which functions to remove dead skin cells and nourish the skin.⁽⁶⁾

Dragon fruit seeds (*Hylocereus undatus*): Dragon fruit is the species of cactus, which is originally grown in southern Mexico and South and Central America.^(7,8,9) In early 19th century, the French brought it to Southeast Asia. It is recently introduced in India and considered a promising and highly remunerative fruit crop. Its fruits are very attractive with mouth melting pulp and black edible seed embedded in pulp, which is very high in nutritive value. Now a day, it is the centre of attraction for the growers of India. It is a long day plant with beautiful night blooming flowers named as Queen of the Night, meaning Noble Woman. Dragon fruit is also known by other names also, i.e., strawberry pear, Pithaya, night blooming cereus, belle of the night, Cinderella plant and Jesus in the cradle. The name Pitaya has been given to dragon fruit because of the bracts or scales on its skin, hence known as the scaly fruit. It has ornamental value because of

its large gorgeous creamy white flowers of 22- 25 cm diameter, which bloom at night. It is considered as a fruit of 21st century.⁽¹⁰⁾ There are three types of dragon fruit, i.e., (i) *Hylocereus undatus*-white flesh with pink skin, i.e., (ii) *Hylocereus polyrhizus* - red flesh with pink skin, i.e., (iii) *Hylocereus costaricensis* - with violet red flesh and pink skin and *Hylocereus (Selenicereus) megalanthus* – white flesh with yellow skin. The biggest advantage of this crop is that once planted, it will grow for about 20 years, and 1 hectare could accommodate about 800 dragon fruit plant. It is mainly grown commercially in Israel, Vietnam, Taiwan, Nicaragua, Australia and the United states.⁽¹¹⁾ It starts fruit bearing in the second year after planting and optimum production within five years. This article mainly concentrates on how to cultivate dragon fruit based on the literature and research work done on the genus *Hylocereus* and species *costaricensis*. *Hylocereus* comprises 16 species, which are endemic to Latin America and they are not very popular among the growers and researchers. Very few research works have been done on this fruit crop in India. Specific topics associated with the difficulties met by countries that have introduced the new species. Therefore, the research thrust must be given in the following areas; floral biology and ecophysiology. This article mainly focus on literature available on *Hylocereus*, grouping the references which covers importance, botany, vegetative and reproductive biology, cultivation, manuring, pollination, harvesting, pest & disease. So that everyone become familiar with dragon fruit.

Figure No. 1: Dragon fruit seeds



Papaya seeds (*Carica papaya*):

Papaya belongs to a small family caricaceae having four genera in world. The genus carica L. is represented by four species in India, of which *Carica papaya* L. is the most widely cultivated and the best-known species.⁽¹²⁾ It is commonly known as Papaya Melon tree, Pawpaw or Papau, Kapaya, Lapaya, Papyas, Papye, Tapayas, Fan mu gua,

papita, arand- kharpuja, papayabaum and papaya. It contained with hydroxyl acids, or AHAs which in a good way is whitening and smoothing and keeping your skin to always plump and bright. Papaya seeds used for skin whitening, reduces pore size, moisturize the skin, reduces under – eye dark circle, cures eczema, keep skin hydrated, clears pigmentation, acne treatment.⁽¹³⁾

Figure No. 2: Papaya seeds

**Liquorice (*Glycyrrhiza glabra*):**

Applying liquorice topically fades sun spots and leads to an even-looking skin tone. Liquorice powder also contains UV blocking enzymes that protect skin and prevent sun damage. Liquorice powder to the affected area naturally treats hyper pigmentation, giving your skin a smooth and brighter look. Mulethi powder helps speed up the process by evening out

skin tone and minimising the appearance of scars. Topical application of Mulethi powder is recommended to those with scars. The antioxidants in liquorice powder block free radicals from harming the skin, thus protecting it from premature ageing. The UV-blocking enzymes ward off sun damage and protect the skin from the harmful effects of the sun.⁽¹⁴⁾

Figure No. 3: Liquorice powder

**Tamarind Hull (*Tamarindus indica*):**

It contains alpha-hydroxy acids (AHAs) that help to exfoliate dead skin cells. AHAs work by breaking down the bonds between dead skin cells, allowing them to be easily removed.

This process reveals smoother, brighter skin. Additionally, exfoliating the skin with tamarind helps to increase blood flow. Which can promote a healthy, radiant skin complexion.⁽¹⁵⁾

Figure No. 4: Tamarind Cover

**Rice flour (*Oryza sativa*):**

It's main benefit to absorb excess oil in skin. Rice flour could

definitely remove oil from the skin. Gentle rubbing on the skin of just about any product can lead to some exfoliation.⁽¹⁶⁾

Figure No. 5: Rice flour**Vitamin E:**

Vitamin E is a fat-soluble, essential nutrient with anti-inflammatory properties. Vitamin E helps support the immune system, cell function, and skin health. It's an antioxidant, making it effective at combating the effects of

free radicals produced by the metabolism of food and toxins in the environment. Vitamin E may be beneficial at reducing UV damage to skin. Vitamin E is an antioxidant that can help fight free radicals, which are molecules that damage the DNA in cells. Vitamin E could fight skin damage from sun exposure.⁽¹⁷⁾

Experimental: Materials & Methods:**1. Removal of dragon fruit seeds:**

Take a dragon fruit and cut it in the middle to make 2 pieces of

fruit. Remove the pulp of dragon fruit and pass it through the sieve. The white pulp and dragon seeds are separated now.

Figure No. 6: Dragon fruits seeds**2. Collection of all ingredients:**

Other ingredients like cornstarch, olive oil, tamarind powder, papaya seeds, Dragon fruit, Rice flour, olive oil, Vitamin E capsules were purchased from Pimpri market. Excipients

such as glycerine, aerosol, liquorice, propylene glycol, SLS, Distilled water, carbapol were collected from the laboratory of RMDIPER, Chinchwad.

3. Formula:**Table No. 1: Formula of Dragon Fruit in polyherbal scrub**

Sr. No.	Ingredients	Category	Quantity
1	Dragon fruit seeds	Antiacne	1gm
2	Papaya seeds	Antiseptic	1gm
3	Liquorice	Minimizes the production of tyrosinase to combat discoloration	1ml
4	Tamarind Powder	Cleanser, removal of dead cell	1gm
5	Rice flour	Tightening Agent	4gm
6	Glycerine	Humectant	5ml
7	Cornstarch	Antibacterial, Anti-inflammatory	4gm
8	Aerosol	Foaming agent	4gm
9	Propylene Glycol, methyl Paraben	Preservative	5ml
10	Sodium Laurel Sulphate	Cleansing, Foaming, Emulsifying agent	3gm
11	Olive oil	Antioxidant	1ml
12	Vitamin E	Moisturizer	2 capsules
13	Distilled water /Rose water	Balance pH level, Enhances Absorption	6ml
14	Carbapol	Thickening agent	5gm

4. Mixing of all ingredients:

1. In beaker A, mix 5ml of glycerine and 4gm of cornstarch with continuous stirring.
2. In beaker B, mix 5ml of propyl glycol, 1gm liquorice powder, 4gm of aerosol, 4gm of rice flour and small amount of rose & distilled water.
3. In beaker C, mix carbapol gel (5gm of carbapol + Water).
4. In beaker D mix 3gm of Sodium Laurel sulphate (SLS) & 1ml of Olive oil.

Figure No. 7: Herbal Ingredients used for formulation**5. Preparation of a scrub:**

For preparation of scrub, in beaker A, add the contents of beaker B, C and D in the respective order. Mix all the ingredients transferred in the beaker A. Add 50:50 ratio of

fine and coarse powder of dragon fruit seed, papaya seed and tamarind in the mixture of beaker A. At the end, add vitamin E capsules as a moisturizer & set aside the scrub for 10-15 min.

Figure No. 8: Final product of scrub**Uses of Scrub:**

1. Moisturization and Nourishment.
2. Helps to improve in smoothness of skin, Skin texture and tone.
3. Helps to remove dull and dead skin.
4. Soothes Sunburn.
5. Promoting to healthy skin
6. Treat Acne

Results & Discussion: Evaluation Parameters:

The prepared gel was evaluated for appearance, pH, consistency, Spreadability, extrudability, viscosity, irritability, washability, grittiness, foamability.

Appearance:

The prepared scrub was evaluated for its odour and colour. The colour was found to be brown in colour and odour was found to be characteristics.

Consistency:

It was found to be semisolid and homogeneity with visual observation.

pH:

pH of the prepared scrub was evaluated. Small amount of the gel was applied on the pH paper and found to be 7.1. It is a neutral in nature.

Spreadability:

The spreadability is very important in the behavior of gel that comes out from the tube. It is used to identify the extend of spreadability by the gel on the skin. A small quantity of sample was placed on a glass slide and another slide was placed above them; 100 g of weight was placed on the slide. The time taken for the gel to spread on the slide was noted and measured which was found to be 4 cm in 60 sec. It was calculated by using following formula:

$$S = \frac{L \times m}{t}$$

S = Spreadability

m = Weight placed on slide L = Length of the glass slide t = Time taken in seconds

Extrudability:

Small amount of gel was taken into a collapsible ointment tube. One end close and the other end keep opened. Slight pressure was applied on the enclosed side. The time taken to extrude and the amount of the gel extruded was noted.

Irritability:

A small amount of the gel was applied on the skin and kept for few minutes and found to be non-irritated.

Washability:

A little quantity of gel was applied over the skin and was wash with water and it was easily washable.

Grittiness:

Gel was found to have a few gritty particles.

Foamability:

Small amount of scrub was shaken with water in a graduated measuring cylinder and foam was measured.

Viscosity:

Brookfield Viscometer was used to measure the viscosity of the gel. The viscosity was found to be 1.4580 poise.

Table No. 2: Evaluation of Dragon Scrub

Sr. No.	Parameters	Observations
1	Colour	Light Yellow, Skin like
2	Odour	Characteristics
3	Consistency	Good
4	pH	2
5	Viscosity	1.4580 poise
6	Spreadability	6.72 gm / sec
7	Washability	Easily washable
8	Grittiness	Small gritty particles
9	Foam Ability	Foam volume 100ml at 5 minutes
10	irritability	Non irritant
11	Extrudability	Easily Excruded

Conclusion:

The herbal scrub was prepared and evaluated. The herbal facial scrub formulated in the laboratory was found to be compared with various parameters such as appearance, pH, and viscosity, spread ability, wash ability, irritability and found to be satisfied with all required characterization. Thus, the developed formulation can be used as an effective scrub for using it to bear a healthy and glowing skin. It contained dragon fruit seeds which act as antioxidant with its rich content of content of vitamin C, tamarind cover to remove dead scales on the skin, papaya seeds as acne control, rice starch as a protecting agent and soothe sun damage, Vitamin E as anti-aging ingredient, liquorice to diminish dark circles. After using the scrub, skin was sure to feel softer, cleaner and

refreshed. It made skin beautiful, youthful and soft and glowing. Herbal cosmetics showed lesser or no side effects, hence use of herbal cosmetics get increased.

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Conflict of Interest: Nil

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