

**FORMULATION AND EVALUATION OF POLYHERBAL BIODEGRADABLE MICRO BEADS FACE SCRUBBER****Seema Yuvraj Mendhekar\*, Yasmin M. Jakir Patel, Rutuja Suresh Jadhav, Jadhav S. L. and Gaikwad D. D.**

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**ABSTRACT**

For the enhancement of beauty a herbal face wash playing a important role it consist of materials that a balanced nutrition is required for the skin to keep it clear glossy and healthy. The use of natural ingredients to fight against acne. Daily cleansing does not remove dead epithelial cells and impurities which are trapped in pores of skin. These dead cells and impurities affect the skin life if it trapped in pores of skin resulting the less life of skin, problems of Acne and blackheads. Solution of these problem is use of face scrubber ones or twice in week which is exfoliating, mild and contains natural traditional ingredients. Generally face scrubber contains crushed seeds for removing dead cells of skin but that crushed seeds are not uniform in size and finely crushed particles causes for skin crashes or damage. To overcome this problem we replace the crushed seeds with granules or beads which removes the dead cells from pores of skin safely and without damaging the skin. It is a very good attempt to establish the polyherbal biodegradable micro beads Face Scrubber Gram flour, green tea, sugar, starch, milk, Skin care oil etc. in this scrubber-beads are outer cover with Gram flour and inside is oil and plant extract. When we massage with this beads outer layer are exfoliate dead skin and black heads and inside oils is spread on skin which will help to growth of new fresh cells. The result is ever youthful and fresh look.

**KEYWORDS:** Polyherbal mild plant extract, Biodegradable micro beads, youthful and fresh look, skin safety.**INTRODUCTION**

Face skin is the major part of the body, which indicates the health of an individual. It is a consist of materials such as amino acids, lipids and carbohydrates etc so that a balanced nutrition is required for the skin to keep it clear glossy and healthy. In ancient times women are very conscious about their beauty and started to dress themselves because they wanted to increase their own beauty.<sup>[1]</sup> Face skin is the major part of the body, which indicates the health of an individual. It consists of materials such as amino acids, lipids and carbohydrates etc so that a balanced nutrition is required for the skin to keep it clear glossy and healthy. "Polyherbal biodegradable micro beads Face Scrubber" is face scrubber with traditional ingredients in new format. In this scrubber we Replacing crushed seeds with granules or beads in scrubber which contain inner layer of oil which is essential for skin and outer is traditional material gram flour, milk, sugar, olive oil, almond oil, starch, Honey, Activated charcoal and many plant extract (Turmeric, Lemon peel, Green tea, Rose petal, Sandal wood, Calendula flower, and Aloe vera medicinal value) which is bio degradable and natural ingredients which was use traditionally as a cosmetics.<sup>[2]</sup>

Even today, people especially in rural areas, and hilly region select the natural remedies like plants extracts for cosmetics. Herbal cosmetics are products which are used to purify and beautify the skin. The main advantage for using an herbal cosmetic is that it is pure and does not have any side effects on the human body men have rough skin and when they don't take sufficient care then the skin turns dark due to over exposure of the sun.<sup>[3]</sup> It can be used for various purposes such as cleansing, glowing, protecting, moisturizing, softening, whitening etc. Today herbal cosmetics are great in demand due to its ability to nourish the skin with all its necessity without any side effects. Different types of herbal topical application of cosmetics are in the market such as facial mask, peel off, sunscreen gel, facial scrub etc. Facial scrub Cosmetics are available as various forms and each has its own role to play on the skin. Skin becomes dull, non glowing due to various causes and these can effectively be overcome with the application of scrubs. There are two types of scrub being used on the skin such as facial scrub and body scrub. These two differ only with the ratios of oil and sugar added in each. Usage of oil is high in facial scrub due to which it is less abrasive. It removes the dead skin cell and exfoliates the skin. Scrub can be used on any type of skin. Only the essential oil used in scrub as ingredient will vary with the type of skin. Skin is

classified into three types such as dry skin, oily skin, sensitive skin.<sup>[4]</sup>

### Ideal Properties of Scrub

An ideal scrub is accepted to possess the following properties.<sup>[5]</sup> It should be

- Non toxic
- Possess small gritty particles
- Mild abrasive
- Non irritating
- Non sticky
- Able to remove dead skin cells

### MATERIALS AND METHODS

All crude drugs were collected from Ayurvedic medicine shop, Alephata, Junner, Pune. The traditional ingredients are used for the formulation of natural biodegradable beads face scrubber. The materials used are gram flour,

olive oil, almond oil, milk powder, starch, dextrose, alginate, water, Honey, Activated charcoal and many plant extract (Lemon peel, Green tea, Rose petal, Sandal wood, Calendula flower and Aloe vera, turmeric) perfume and pigments (if needed).

### Method of synthesis

The formulation is as per shown in fig1. Initially gram flour, olive oil, milk powder, starch and all extract are mixed to form a homogeneous mixture. The formed homogeneous mixture with dextrose, alginate and water is again properly mixed at 60<sup>0</sup> C. This mixture is then injected in calcium chloride solution to form granules. The size of granules depends of injection needle size and pressure. These granules dried for 2hr. to form beads. These beads are used as scrubber with lotion or skin medium for scrubbing formulation.

**Table No. 1: Ingredients of micro beads and its use.**

Sr. No.	Name of Ingredients	Use	Quantity
1	Gram flour	It removes dead skin, astringent and protective	55
2	Olive oil	Nutritive, Skin tonic and emollient	8
3	Almond oil	Nutritive, Skin tonic and emollient	8
4	Milk powder	Smoothing, cooling effect and improves fairness	15
5	Potato Starch	Natural Scrubber	14
6	Plant Extract	-	5
7	Dextrose	Natural Scrubber	3
8	Pigments	Color agent	1
9	Wax	Binder	1

**Table No. 2: Plant Extract with Medicinal use and figure.**

Sr. No.	Plant Name	Medicinal use	Quantity	Picture
1.	Lemon peel powder <i>Citrus limon(L.) Osbeck., Rutaceae</i>	The high content of Vitamin C in lemon will help to lighten the skin tone and remove dark spots caused by skin tan.	2 gm	
2.	Green Tea powder <i>Camellia sinensis L. Theaceae</i>	Many scientists believe that free radicals contribute to the aging process as well as the development of a number of health problems. Polyphenols present in green tea helps in anti ageing. Makes your skin looks younger and better.	2 gm	
3.	Rose petals powder <i>Rosa canina L. Rosaceae</i>	Rose petal is rich with the anti bacterial properties along with the positive effects of Vitamin K, C and B.  It also have good amount of antioxidants. You can also get a radiant and glowing skin with the help of rose petals.	2 gm	

4.	Sandal wood powder <i>Santalum album L.</i> <i>Santalaceae</i>	Anti-tanning Property, Anti-aging Property, Skin Softening Effect, Pimple and Acne Treatment, Clear Complexion.	2 gm	
5.	Calendula flower powder <i>Calendula officinalis L.</i> <i>Asteraceae</i>	Help soften skin, reduce inflammation, and to treat acne and it possesses anti-viral, anti-inflammatory properties.	1 gm	
6.	Honey	Light humectants and nutrients used as thickening agent to give body to facial masks, creams and lotions.	3 gm	
7.	Activated charcoal powder	Activated charcoal draws bacteria, poisons, chemicals, dirt and other micro-particles to the surface of skin, helping you to achieve a flawless complexion and fight acne.	1 gm	
8.	Turmeric Powder <i>Curcuma longa L.</i> <i>Zingiberaceae</i>	Antibacterial, antifungal, also adds glow to the skin.	1 gm	
9.	Aloe vera powder <i>Aloe vera (L.)</i> <i>Burm.f.</i> <i>Asphodelaceae</i>	Moisturising agent, delivers something property to the skin.	3 gm	



**Fig No. 1: Polyherbal biodegradable micro beads (By using three colour agent).**

### Evaluation

The prepared face wash gel was evaluated for various parameters as follows:

- 1. Washability:** Formulations were applied on the skin easily remove by washing with water were checked manually.
- 2. pH:** pH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant temperature.
- 3. Colour:** The colour of the face wash gel was checked visually.
- 4. Odour:** The formulation was evaluated for its odour by smelling it.
- 5. Consistency:** It was determined manually.
- 6. 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.
- 7. Spreadability:** The spread ability of the gel was found manually by applying the gel on the skin with hand or finger gentle rub which easily spread through the face.
- 8. Foamability:** Small amount of gel was taken in a beaker containing water. Initial volume was noted,

beaker was shaken for 10 times and the final volume was noted. Grittiness: The product was checked for the presence of any gritty particles by applying it on the skin.<sup>[2]</sup>

### 9. 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. Our product natural biodegradable micro beads face scrubber being cosmetic product we have conducted the patch test for the same on different type of skins like fair, dark, medium dark, medium fair and medium and we got the results as shown in following picture.<sup>[2]</sup>

### 10. Beads size

The beads are of uniform size to get proper application during usage. The uniformity in size provides an advantage of proper application on the skin.

### 11. Swelling index

Free swelling index is the increase in the volume of material, without any external constraints, on submerge in water. Swelling index is important to determine as during wet season causes swelling in product while in dry season causes shrinkage in the same. As this type of volume change takes place it is necessary to know its swelling index. Also sometimes to determine the purity of particular product this parameter is important.

**Mechanical stability:** The mechanical stability is good. The proper mechanical strength is important as the outer layer should exfoliate during massage and then the oil is spread on the skin. This particular sequence is possible

when the outer layer will have the good mechanical strength. pH value is 5.4. How to use?

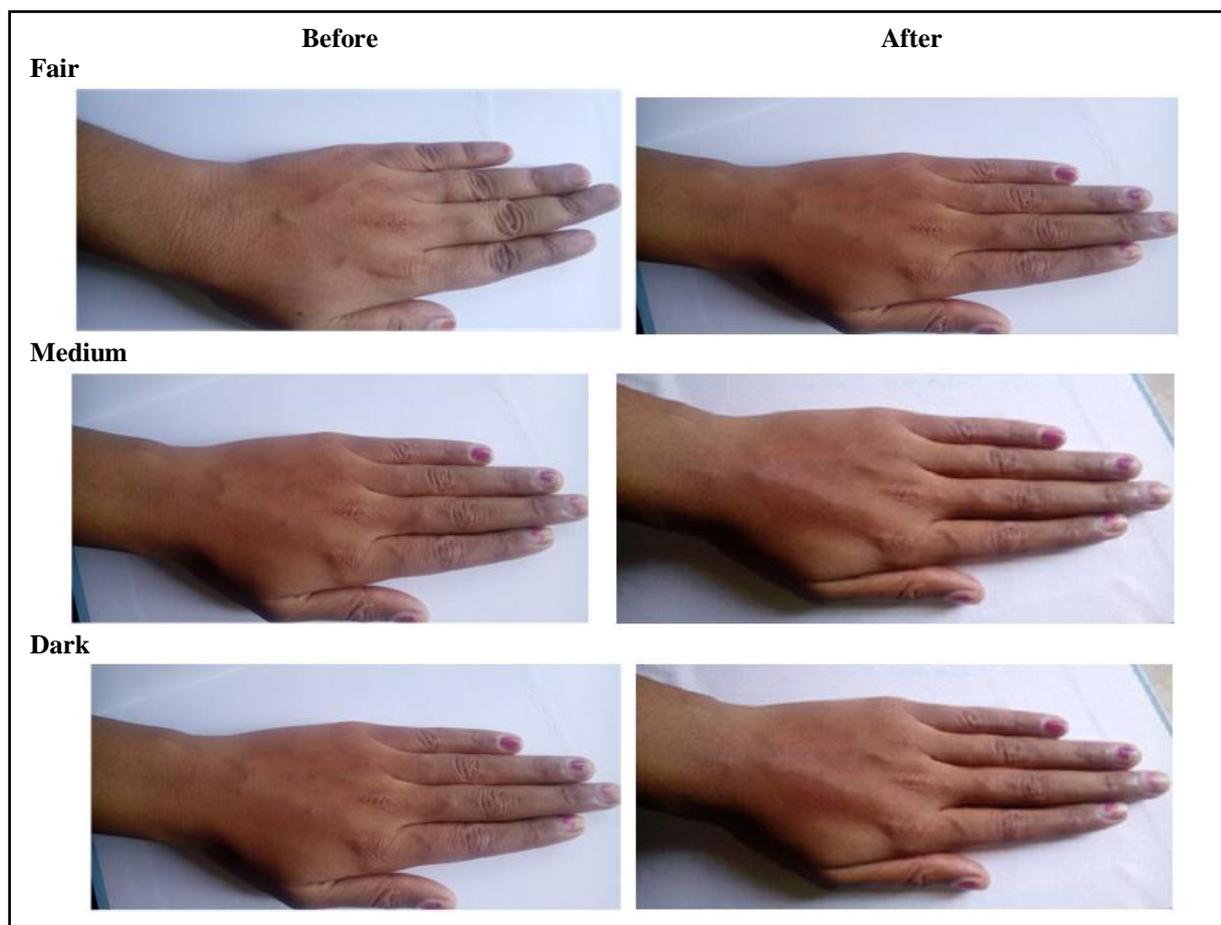
- During its use firstly wet your face with normal water.
- Then massage with the scrubber for 2 to 4 minutes in circular motion.
- After completing massage wash your face with water.<sup>[2]</sup>

### RESULTS AND DISCUSSION

To observe the specific effect and the performance of these beads for the application of scrubber some tests and few parameters are studied which are patch test, beads size, swelling index, mechanical stability and pH.

**Table No. 3: Evaluation Parameter polyherbal biodegradable micro beads Face Scrubber.**

Sr. No.	Parameters	Formulation	Marketed
1	Colour	Yellow, Green, Red	Cream pink
2	Odour	Pleasant	Pleasant
3	Consistency	Good	Good
4	pH	7.0	7.0
5	Spreadability	Good	Good
6	Washability	Easily washable	Easily washable
7	Grittiness	Small gritty particles	Small gritty particles
8	Foam ability	Foam volume 120ml at 5 minutes	Foam volume 150ml at 5 minutes
9	Irritability	Non irritant	Non irritant
10	Extrudability	Easily extruded	Easily extruded



**Fig. No. 2: Patch Test perform on three different skin type.**

**CONCLUSION**

From the process it is clear that the synthesis of scrubber is very simple process and also it is performed with all traditional ingredients like gram flour, milk, sugar, olive oil, almond oil, starch, Honey, Activated charcoal and many plant extract (Turmeric, Lemon peel, Green tea, Rose petal, Sandal wood, Calendula flower and Aloe vera with medicinal value). The crushed seeds are sensitive to screen so instead of that this is alternative pathway. Another advantage is beads are biodegradable. The formed scrubber is not only advantageous performance wise but also economically.

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