



## Compact Powder: Preparation and Evaluation of Skin Brightening Powder Using Roots of Liquorice

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### ABSTRACT:

The aim of this project work is to in-house for glowing skin by using natural ingredients. The natural powders used for this product are rose powder, orange peel powder, liquorice powder. In this liquorice acts as skin whitening agent. Rose petal powder and orange peel powder act as pigmenting powder. It is used to give your face a light coverage or to give your makeup the perfect finishing touch. Results of this study scientifically verified that compact powder has good flow property, free from skin irritation. It maintains body  $P^H$ . It gives an even tone with the glow by pay-off test.

**KEY WORDS:** Compact powder, Liquorice.

### INTRODUCTION:

As per section 3 of the drug and cosmetic act 1945, cosmetic means an article intended to be rubbed, poured, spray, sprinkled, or applied. Compact powder is a finely milled cosmetic powder that is compressed into a solid form, make it easy to carry and apply, help to control oil and shine and create a matte finish. Applying compact powder after foundation helps set the makeup in place, extending its worn time. It absorbs excess oil and sweats, helps to keep make up look fresh. Compact powder provides light coverage and helps even out skin tone. It can be used on various skin types, including oily skin. It can be applied with a sponge or brush [1]. Liquorice (*Glycyrrhiza glabra* Linn) *Glycyrrhiza glabra*, family Leguminosae, is a plant which grows in Egypt and other countries of the world [2], [3]. Its roots possess some nutritive value and medicinal properties [4]. *Glycyrrhiza glabra* Linn, a commonly used herb in ayurvedic medicine. Studies indicate that *Glycyrrhiza glabra* Linn possesses antibacterial, antioxidant, antimalarial, antispasmodic, anti-inflammatory and anti-hyper glyceic properties. [5] [6]. It is used for Skin brightening and reduce dark spots [7]. It can help soothe skin conditions like eczema, rosacea, and acne, the extract can help protect skin from damage caused by sun, pollutants, and smoke. It can help treat acne by controlling oil production [8]. Liquorice extract can help wounds heal and remodel, and it can help to reduce hyper pigmentation [9]. Orange peel powder contains high quantities of Vitamin C and has enormous antibacterial and antimicrobial properties that help in enhancing the skin's health [10]. It is fighting microbes and works towards skin brightening and whitening. The powder is useful in forming collagen and elastin of the skin [11] [12]. Rose powder has many benefits for the skin, including reducing acne, brightening skin, and removing dead skin cells. It can also help with pigmentation and helps fight acne, reduce dark spots, scars and marks. It can also repair damage and protect against UV rays. It is also rich in anti-oxidants and anti-bacterial compounds as well as vitamin C [13]. It also has many benefits like moisturizing, exfoliating, anti-aging, reducing blemishes, soothing, tightening pores [14]. Reducing wrinkles, reducing acne, Reducing dark spots and can help reduce dark spots, scars, and marks [15].

Zinc Stearate is a white, fluffy powdered ingredient that acts as a thickening agent and lubricant in cosmetics. It gives texture to formulations while enhancing the spread ability of powders. A zinc salt of stearic acid, this ingredient has mattifying properties and reduces shine by absorbing excess oil. [16]. It has multiple functional properties. It serves as a binder in pressed powders, helping to compact pigments and prevent crumbling. Its anti-caking properties ensure smooth textures in loose powders, eyeshadows, and blushes [17]. Starch has many uses like abrasive action, absorbent property, surfactant and cleansing, skin, and hair-conditioning, and viscosity controlling properties [18]. It has some mattifying properties that help with greasiness and are good for oily skin. [19]. Zea Mays starch is used as a thickening agent and absorbs oils more effectively. It also provides products with efficient spread ability, thereby preventing cracking [20]. Kaolin ingredient appears as a white to yellowish powder. It is used to cleanse the skin because of its ability to absorb oil and make the surface smooth [21],[22]. Kaolin clay is also a gentle ingredient that can be used as an exfoliant. Additionally, it manages dry skin and prevents acne. It has the ability to draw excess oil from the skin and exfoliate it to leave the surface clean and smooth [23]. Kaolin clay also has soothing properties to reduce redness and irritation [24]. Titanium dioxide ( $TiO_2$ ) is used in a variety of personal care products, including sunscreens, pressed powders, and loose powders, as a UV filter or whitening agent [25], [26]. Methyl paraben is a synthetic preservative commonly used in cosmetics. Its primary function is to extend the shelf life of these products by inhibiting the growth of harmful bacteria and molds [27]. By inhibiting

the growth of harmful microorganisms, methyl paraben helps maintain the safety and integrity of these products, ensuring they remain free from contamination during use [28].

## MATERIALS AND METHODS:

Liquorice, titanium dioxide, zinc stearate, kaolin, methyl paraben, and starch were purchased from yucca enterprises, Mumbai by St. Anns college of pharmacy. Rose flowers and Oranges were purchased from local market, Vizianagaram.

## FORMULATION OF COMPACT POWDER

**Table.no. 1: Composition table for Compact Powder**

S. No.	Name of Ingredients	Quantity for 60gm	Role of Ingredients
1.	Liquorice powder	24	Skin whitening agent
2.	Orange peel powder	6	Pigmentation agent
3.	Rose petal powder	3	Pigmentation agent
4.	Titanium dioxide	3	SPF
5.	Kaolin	3	Covering agent
6.	Talc	9	Slippering agent
7.	Zinc stearate	6	SPF
8.	Maize starch	6	Binder
9.	Methyl paraben	0.1	Preservative

### Preparation of dry Powders:

Fresh rose petals, orange peels were dried under direct sunlight for 3 days. Roots of liquorice small pieces also dried for 3 days under sun light. After that grind it and sieve using muslin cloth. Stored in a neatly cleaned and air tight container.

### Preparation of Compact Powder:

Take a clean mortar and pestle mix one by one required quantities of Titanium dioxide, kaolin, talc. Add liquorice powder, rose petal powder and orange peel powder mix it well. Finally add zinc stearate and maize starch and methyl paraben. Continuously blend the mixture, sieve the mixture using muslin cloth to get a smooth powder. Kept in a dryer for a required time period. Stored in a suitable container.

## EVALUATION TESTS:

### Physical Characterization:

Physical parameters such as color, odor and texture were checked visually.

#### Flow Properties

##### Bulk Density:

Weigh 10gr of powder and pour it in a measuring cylinder and measure the volume of powder. Repeat this process for 3 times. Calculate the bulk density by using formula

$$\text{Bulk density} = \text{Mass} / \text{Bulk volume}$$

##### Tapped density:

Weight 10gr of powder and pour in a 50ml of measuring cylinder. Then tap the cylinder 50 times. Measure the volume of the powder repeat this process for 3 times. Calculate the tapped density by using formula

$$\text{Tapped density} = \text{Mass} / \text{Tapped volume}$$

##### Angle of repose:

A funnel is positioned at a certain height; the powder is allowed to fall on a flat surface. An angle possible between surface of pile of powder and horizontal plane is called angle of repose. It can be calculated by using formula

Angle of repose ( $\theta$ ) =  $\tan^{-1}(h/r)$

**P<sup>H</sup> test:**

Take 0.5gr of powder in a beaker add 10ml of distilled water to it. Check the P<sup>H</sup> of powder using P<sup>H</sup> meter.

**Moisture Content:**

Take 5 gr of powder in a self-shield cover and place it in desiccator for 24hr. Observe loss in weight of powder by using the formula

$$\text{Moisture content} = \frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$$

**Irritation:**

Take 1 gram of powder and apply on Skin and leave up to 8hrs. Observe for redness and irritation.

**Solubility:**


Take 1 gram of Powder in beaker. Add 50 ml of distilled water to it. Boil and filter the solution. Add 15ml of rectified spirit to 10ml of filtrate reflexed for 15min. again filter the solution. And finally observe the colour change.

**Pay-off test:**

Observe the adhesive nature of powder with a powder puff.

## RESULTS AND DISCUSSION:

**Table No 2: Evaluation test results**

Test	Result
Color	Warm beige (light skin)
Odor	Jasmine
Texture	Smooth
Bulk density	0.5gr/ml
Tapped density	0.67gr/ml
Angle of repose	28.80° (Good flow)
P <sup>H</sup> test	6
Moisture content	9%
Irritation	No irritation
Solubility	Faintly coloured
Pay-off test	Good adhesive nature
Product (Compact powder)	

## DISCUSSION:

Compact powder maintains the good skin condition, whitening and controls the oil production. It was prepared by all natural ingredients. Those dry powders were not harmful to skin. The natural ingredients liquorice, orange peel powder and rose petal powder were protects the skin from many skin problems and conditions. Flow properties were evaluated by bulk, tapped density and angle of repose as it was a solid dosage form. Its flow characteristics

were reached the optimum values. It was showed 0.5gr/ml, 0.67gr/ml, 28.80° respectively. It has P<sup>H</sup> 6. 9% of moisture content, no skin irritation by apply the powder on test area, good stability property and finally powder shows the good adhesive property by pay off test.

## CONCLUSION:

By this study we summarized, liquorice has reduced hyper pigmentation, used for skin brightening, whitening and protect the skin from environmental pollutants. Orange peel, rose petals powder has anti-bacterial and antioxidant property used for acne problems and prevents dark spots. Thickening of zinc stearate, absorbent of starch, kaolin has removed the excess oil from the skin, titanium dioxide as UV absorbent agent, as a preservative of methyl paraben was used in this preparation of compact powder. This compact powder was evaluated by flow properties, P<sup>H</sup>, moisture content, solubility, irritation, pay-off test. Each evaluation test results were showed optimum values.

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