

Formulation and Evaluation of Polyherbal Facial Scrub

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Abstract

The main objective of the present study was to formulate a poly-herbal facial scrub with the incorporation of *Nigella sativa* (Kalonji) as the main active drug. The use of natural constituents to act potentially against wrinkles, acne and they also helps in control of secretion of oil from the skin open pores that is why they are the part of herbal cosmetics. Herbal products or cosmeceuticals usually consist of the parts of plant which possess antimicrobial, antioxidant and anti aging properties. Natural constituents are the safest and the best product to use in day to day life because they do not have any adverse effects and these cosmetics also influences the biological function of the skin. In this formulation of facial scrub Sandalwood, Fuller's earth, Neem, Turmeric, Green tea, Kalonji, Liquorice and Aloe Vera are used as active ingredients. The prepared facial scrub was evaluated for various parameters such as appearance, pH, viscosity, Spreadability, extrudability, grittiness, stability studies, Foamability, washability, irritability and found to be contented with all required characterizations. Thus, this formulation can be used as an efficient facial scrub for using it for the maintenance of healthy and glowing skin.

Keywords:- Antioxidant, Anti microbial, Less Abrasive, Polyherbal facial scrub, Skin Exfoliating

Introduction

Cosmetics are used universally to enhance beauty and are available in different forms. Various types of skin ailments are formulated like skin protective, sunscreen, anti-acne, anti-wrinkle for beautifying skin (Ashawat *et.al*, 2009). From ancient era people use herbs or herbal cosmetics for cleansing, beautifying, fighting oil, acne, blackheads, pimples, and dark circles. According to Ayurveda, impurities present in blood are major cause of skin problems (Mendhekar *et.al*, 2017 and Dureja *et.al*, 2005). Face scrubs are the cosmetic formulations, generally a cream or gel that contains tiny exfoliating particles (Ghode *et.al*.2019 and

Chaudhari *et.al* 2020). Face scrubs exfoliates and stimulate blood circulation and promotes skin turnover by removing dead skin cells and adherent cells in the stratum corneum (Daud *et.al*, 2013). Face scrub cleanses the skin, removes dirt, grime and oil from pores, maintain the elasticity and accelerates the renewal of skin cells (Nguyen *et.al*, 2014 and Fatima *et.al*, 2018). Ideal properties of a face scrub are: Mild abrasive, Non-stick, Non-toxic, Removes dirt and dead skin, Contain small gritty particles, Non-irritant (Talepekar *et.al*, 2016).

Material and Methods

All the natural materials used in the study were purchased from the local market (Paonta Sahib), in a dried powder form. The details of the plant material used in the formulation are mentioned in Table 1 (Sindhu *et.al*, 2013 and Pal *et.al*, 2017).

Table 1: Plant Material Used In Formulation				
Name Of Herbal Drug	Botanical Name	Chemical Constituents	Cosmetic Uses	Quantity
Aloe Vera (Indian aloe)	<i>Aloe barbadensis</i>	Betacarotene, Aloe emodin, Aloin	Soothe sunburn, moisturize the skin, fights skin aging, reduces acne, lightens blemishes	q.s.
Fullers Earth (Multani mitti)	Bentonite Clay	Hydrous aluminium silicates, Calcite	Oil and impurities absorber, provide fairness and glow, fights acne and pimples, improves skin elasticity	25%
Turmeric (Haldi)	<i>Curcuma longa</i>	Curcuminoids	Reduce acne and any resulting scars, anti-inflammatory, anti-oxidant, provides glow and lustre	20%
Green Tea (Chai)	<i>Camellia sinensis</i>	Catechin, Theanine, β -carotene	Antioxidant, anti-inflammatory, and antimicrobial, treats acne and oily skin, reduce sebum secretion	25%
Amla (Indian gooseberry)	<i>Phyllanthus emblica</i>	Chebulagic acid, Gallic acid, Ellagic acid	Anti-aging, treats acne, evens skin tone, treats skin pigmentation, removes dead skin, natural hair straightener	10%
Neem (Nim)	<i>Azardicachta indica</i>	Azadirachtin, Nimbin, Gedunin	Treat dry skin, stimulate collagen production, reduces scar, heal wounds, treat acne, minimize warts	3%

			and moles	
Kalonji (Black caraway)	<i>Nigella sativa</i>	Thymoquinone, Linoleic acid, Palmitic acid	Anti bacterial, prevent acne, antioxidant, fights hair fall, fights skin infections, clears skin complexion	7%
Liquorice (Mulethi)	<i>Glycyrrhiza glabra</i>	Glycyrrhizin, Liquirtin, Anethole	Brightens skin, hide sun damage, fade dark scars, treat skin condition, ease inflammation, firm and tightens skin, treat acne	10%

Formulation of herbal face scrub-

Preparation-

- Weighed accurately all the herbal powders such as green tea, amla, neem powder and sandal wood powder and sieved through #120 and mixed them together to form a uniform mixture with mortar and pestle.
- Weighed accurately fuller's earth, turmeric, kalonji, and liquorice powder and triturated them together to form a uniform mixture. In that mixture added previously prepared herbal drug and triturated to obtain a uniform drug powder of face scrub.
- In mortar and pestle added aloe vera gel (as base) and all the herbal powder were triturated to obtain a paste like consistency and rose water was added for fragrance.

Methods of Evaluation

Following evaluation parameters were performed to ensure superiority of prepared face scrub;

1. **Physical Appearance:** Physical appearance of formulation was observed visually. In this test colour, odour, nature, and consistency were observed.
2. **Homogeneity:** Homogeneity of the formulation was inspected visually.
3. **pH:** pH of prepared scrub formulation was determined by using digital pH meter.
4. **Extrudability:** Extrudability was determined by the time required by sample to completely extrude from the container, i.e. Sample amount/ time required
5. **Determination of spreadability of scrub:** Small amount of the scrub was placed on the glass slide and another glass slide was placed on the gel. A wooden weight of 20gm was placed on it. The time required for the scrub to spread and the area was measured. The

amount and the area of scrub on the glass slide represent the efficiency of spreadability, i.e. $\text{Spreadability} = M \times L/T$

6. **Irritability:** Little quantity of the scrub was applied on the surface of skin and kept for few minutes.
7. **Washability:** Little quantity of scrub was applied over the skin and washed with water.
8. **Grittiness:** Grittiness was checked manually.
9. **Foamability:** Small amount of scrub was shaken with water in a measuring cylinder and the foam was measured.
10. **Viscosity:** Brookfield viscometer was used to measure the viscosity of scrub.
11. **Stability study:** The formulation was stored at different temperature conditions for a period of 56 days and evaluated for parameters like colour, odour, pH, and consistency.

S. No.	Parameters	Observation
1.	Colour	Buff green
2.	Odour	Aromatic and pleasant
3.	Nature	Semisolid
4.	Consistency	Smooth
5.	Homogeneity	No aggregation
6.	pH	6.81±0.1
7.	Extrudability	Easily extruded
8.	Spreadability	5.76cm/sec
9.	Irritability	Non irritant
10.	Washability	Easily washable
11.	Grittiness	Small gritty particles
12.	Foamability	Foam volume 85ml at 5 minutes
13.	Viscosity	1.8670 poise

Results and Discussion

The face scrub was formulated and evaluated. The grading of evaluation parameters are contented in Table 2. The stability studies shows slight change in pH of formulation which was stored at 40°C and no changes were observed at room temperature (Table 3).

Parameters Days	Colour	Odour	pH
	Day 1	Buff green	Aromatic & pleasant
Day 7	Buff green	Aromatic & pleasant	6.66±0.2
Day 14	Buff green	Aromatic & pleasant	6.42±0.1
Day 28	Buff green	Aromatic & pleasant	6.38±0.1
Day 56	Buff green	Aromatic & pleasant	6.38±0.2

Conclusion

In the current study herbal face scrub was formulated, evaluated for various parameters. The results indicated that the formulation passed the tests. The prepared poly-herbal formulation nourish, moisturize, cleanses, protect the skin against premature aging, acne, and pimples.

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