



FORMULATION AND EVALUATION OF PEEL OFF FACE MASK FROM BAEL FRUIT AND AVARAMPOO FLOWER EXTRACT

*Suraj Rajage¹, *Prabhanjan Kumbhar², Suresh Mote³, Suraj Khapale⁴, Pratiksha Waghambare⁵, Yashoda Hetkale⁶, Pramod Waghmare⁷, Dr. Amit Panaskar⁸, Dr. Bhagyashri Panaskar⁹

^{1,2,3,4,5,6,7}Asst. Professor Pharmaceutical Chemistry, Padmini College of Pharmacy, Dighanchi, Tal-Atpadi, Dist-Sangali, Maharashtra, India-415315.

⁸Professor Dr. of Pharmaceutical Chemistry Department, Padmini College of Pharmacy, Dighanchi, Tal-Atpadi, Dist-Sangali, Maharashtra, India-415315.

⁹Professor Dr. of Pharmacology Department, Padmini College of Pharmacy, Dighanchi, Tal-Atpadi, Dist-Sangali, Maharashtra, India-415315.

Abstract:-

The demand for herbal skincare products has surged remarkably owing to their perceived safety and efficacy. This study focuses on the formulation and evaluation of a novel herbal peel-off face mask using bean fruit powder and avarampoo flower extract. The aim is to harness the potential synergistic effects of these natural ingredients in providing skin benefits, such as antiacne, moisturizing, smoothening, removal of dead skin, and removal of dirt. The peel-off face mask formulations were prepared using a combination of bean fruit powder and avarampoo flower extract along with other selected excipients. Various physicochemical parameters, including pH, viscosity, spreadability, and drying time, were optimized to ensure product stability and efficacy. Additionally, sensory evaluation was conducted to assess attributes, such as colour, odour, texture, and overall acceptability.

Key Words:- Bael Fruit, Avarampoo flower, Peel off Mask, PVA, PEG.

Introduction

The skin protects internal organs from sun damage through the body's defense mechanisms. The skin is the most delicate and protective layer of the human body. Peel-off masks were developed specially for use in beauty salons in cosmetic procedures. We apply our mask immediately on the skin because our product is ready to use. Mask peels are excellent for unclogging clogged pores, clearing debris, and sealing them. They can be used as a treatment for several facial skin conditions, including black heads, dark spots, dead skin, and white heads, respectively. Its main purpose is to increase metabolism due to its occlusive effect on the cranium. This The capacity of mask peel to absorb moisture is the most important feature. Compared to synthetic formulations, herbal formulations are straightforward, affordable, and simple, economical, have fewer side effects, and are environmentally friendly.^[1]

Rutaceae is the family to which Aegle marmelos (L) Correa, well known by its familiar name Bael, belongs. It has been used in traditional medicine since ancient times to cure a variety of illnesses in people. Native to India, this plant is most abundant in the Bengal region, the Himalayan region, Central India, and South India. The majority of the tree's components, including the fruit, blossoms, roots, bark, leaves, and stem, have health benefits at every stage (Maity 2009). This medium-sized tree can be found growing throughout India's jungles at an elevation of 1,200 m. It is found in the sub-Himalayan forests of Bengal, Central and Southern India.^[2]

Types Of Peel Off Face Mask:-

Masks, as we know today, fall into one of four categories:

Table no:-1 Types of face mask^[3]

Sr.no	Types of face mask	Description
1	Peel off	One continuous sheet was applied to the skin, left to dry for 30 minutes, and peeled off. They were perfect at offering both purifying and rejuvenating actions and perceptions. When the polymeric network was removed, they efficiently removed the top layer of old, dead skin cells to reveal the younger-looking skin beneath.
2	Sheet	Sheet masks are the most versatile because they are effective serum formulations with actives added to achieve the product purpose, for example, 1) Whitening 2)Anti-aging, 3)Anti-sebum The sheet of the mask helps stabilize the formulation and gives it the necessary structure, so little stabilizing and structuring ingredients are needed to achieve anything you wish based on the active selected.
3	Leave-on	These kinds of masks come in crème-gel or cream forms that are extremely moisturizing. They are applied to the skin, kept on for 15 to 30 min (or overnight), and then the remaining product is rubbed in. They are meant to deliver more moisture and emollience than regular creams; hence, they have greater lipid and humectant contents.
4	Charcoal/Clay	with the addition of charcoal or clay; these types of masks serve as cream cleansers. In addition, this increases viscosity. Clay and charcoal are excellent food sources for microorganisms; however, they must be purchased properly. Therefore, the proper preservation of this product is crucial.

Bael fruit :**Ayurvedic Properties:-**

1. The fruit has katu (pungent), tikta (bitter), and kashaya (astringent) properties.
2. It has Ushna Virya (hot potency) and Katu Vipaka (i.e., pungent metabolic properties).
3. It aggravates the Pitt doshas (digestion) and pacifies Vata (air) and Kapha (earth and water) doshas.^[4]

Uses:-

1. Asthama
2. Constipation
3. Depression
4. Diabetes
5. Diarrhea
6. Memory
7. Skin bite, when applied to the skin.^[5]

Ayurvedic Action:-

According to Ayurveda, unripe Bael fruit pulp along with sugar or honey is found to be very effective in managing diarrhea, dysentery, and other gastrointestinal disorders. Bael leaf decoction with black pepper also help manage constipation as it loosens the stools due to its laxative property.^[6]

Medicinal uses of bael fruit:-

1. Antidiarrhial activity
2. Antimicrobial activity
3. Antiulcer activity
4. Anticancer activity
5. Antiinflammatory activity
6. Antipyretic activity^[7]

Avarampoo:**Ayurvedic Properties:-**

1. Anti-diabetic activity
2. Anti-cancer activity
3. Anti-fungal activity
4. Anti-viral activity
5. Anti-inflammatory activity.^[8]

Uses:-

When used regularly as a face mask, Avarampoo powder treat uneven skin, prevent black spots and to keep the skin free of blemishes. Avarampoo increases the glow of the skin and improves complexions when used on a regular basis. It can be used for almost all skin types. It is soothing for skin too.^[9]

Ayurvedic Action:-

Since avarampoo has antibacterial and Antiinflammatory properties, it helps treat scalp infections and helps to reduce scalp inflammation. Avarampoo tea also exhibits fever-reducing properties. Along with reducing fever, it also reduces body pain too as it has analgesic properties.^[10]

Medicinal uses of bael fruit:-

Dried flowers and flower buds are used as substitutes for tea in patients with diabetes. This is also believed to improve the complexion. The powdered seed is also applied to the eye, in Cases of chronic purulent conjunctivitis. In Africa the bark and seeds are said to give relief in rheumatism, eye diseases, gonorrhoea, diabetes and gout.^[11]

Aim:- formulation and Evaluation of Peel off mask from bael fruit powder and Avarampoo flower extract

Aim of applying peel off face masks:-

- a) It nourishes the skin and helps to lessen blackheads and acne.
- b) Its natural ingredients help to lessen blackheads and acne.
- c) Dead skin cells are commonly removed with face masks.
- d) These face masks help to quickly restore the skin's lost shine and radiance while alsohaving a calming and relaxing impact on the skin.

Objective Peel off mask:-

1. The composition and development of this peel-off mask must function to remove dirt, germs, debris, and general impurities in order to provide balanced, toned, and healthier skin.
2. The purpose of this peel-off mask is to eliminate dull, dead skin cells and remove the top layer of skin. Skin seems radiant, feels silky, and feels refreshed after doing this. The goal ofthis peel-off mask is to extract debris, bacteria, blackheads, and whiteheads from your skin as the mask dries and becomes tighter.
3. The orange peel powder in this mask exfoliates the skin by sweeping away debris,impurities, and dead skin cells.
4. The charcoal peel-off mask is a fantastic treatment that removes extra oil from the skin.

1. Materials And Methods:-**2. Materials:**

Table 2: List of reagent and chemicals used for research work:

Sr.No	Material	Source
1	Aloe vera gel	Jovees Herbal Care India Ltd A-63 Sector 64 Noida Uttar Pradesh 201301
2	Turmeric powder	Pure Natural Products Private Limited SCF 1073-74 1st Floor Huda Market Sector 21B Faridabad 121001
3	Polyvinyl alcohol (PVA)	Labogens Fine Chem Industry, gujarat
4	Glycerin	Galaxy Surfactants Ltd, Mumbai
5	Polyethylene glycol (PEG)	Matangi Industries is a global manufacturer and supplier, Ahmedabad
6	Polysorbate (tween twenty)	Rdr.pharmachem private limited, Mumbai india
7	Methanol	Venati organics ltd, Mumbai
8	Distilled water	Moradia Brothers Chem Pvt Ltd, Delhi
9	Ascorbic acid	Joshi agrocane pharma pvt ltd, Mumbai

Materials:-**1. Bail Fruit Powder:-**

1. The tray drying of bael fruit is done at 55°C, ± 2°C for 45 to 48 hour.
2. The sun drying of bael fruit powder is done at 35-40°C for 2-3 days.

Table no.3: Phytochemical screening of Bael Fruit

Sr. No.	Phytochemical Compounds	Ethanol	Methanol	Acetone
1.	Tannin	+	+	-
2.	Phenol	+	-	+
3.	Flavonoids	+	+	-
4.	Saponins	-	-	-
5.	Alkaloids	+	+	+
6.	Steroids	+	-	-
7.	Terpenoids	+	-	-

2. Avarampoo flower powder Extract:-

1. Preparation: Avarampoo Powder is prepared with shade dried petals of Avarampoo that are grown without the use of pesticides, herbicides, or synthetic fertilizers.
2. manufacturing process involves gentle drying and grinding methods that preserve the integrity of our floral powder

Extraction of Avarampoo powder:-**Maceration Process:-**

1. Methanol extract was prepared by taking 50 g of *Cassia auriculata* dried flower powder in a separate container, to this 200mL of methanol was added and kept for 24 h in a shaker.
2. Filtered through eight layers of muslin cloth and extract was collected,
3. The extraction process was repeated twice.
4. The collected extracts were cooled.
5. Ethanol extract was prepared like methanol extract.
6. Water extract was prepared by taking 50 g of *Cassia auriculata* flower powder in a separate container, o this 200mL of water was added and boiled for 2 h in a mild heat and kept for 24 h.
7. Then filtered and extractwas collected.
8. The extraction process was repeated twice.
9. Then the collected filtrates were pooled

Qualitative analysis of the phytochemicals in the flower extract of Cassia auriculata.

Table no.4: Qualitative analysis of the phytochemicals in the flower extract of Cassia auriculata.

Sr.no	Compound	EE	ME	AE	AqE
1	Terpenoids	+	+	+	+
2	Tannins	+	-	+	-
3	Flavonoids	+	+	+	WP
4	Saponin	+	+	WP	+
5	Cardiac Glycoside	+	+	+	+
6	Steroids	+	+	+	-

EE = Ethanol extract, ME= Methanol extract, AE = Aqueous extract, AqE = Aqueous extract, WP = Weakly positive

Orange Peel Powder:-

1. Orange peels (OP) were separated and washed with distilled water to remove the dust impurities.
2. The peels were dried for 48 hours in the closed glass container at 26°C temperature directly under the sunlight.
3. After drying, the color of the peels turned to brownish tone (brownish orange color).
4. With the help of grinder machine the peels were crushed and converted to powder form.
5. The standard test sieve BSS-45 was applied in order to keep the uniformity of the particle size.

Turmeric Powder:-

1. Each variety of fresh turmeric roots was cleaned, steamed for 7 min and sliced into small pieces.
2. before drying in a hot air oven at 50°C for about 6 hr.
3. Dry turmeric was collected and ground into fine powder using a high-speed blender.
4. The dry, ground turmeric was packed in a plastic bag, sealed and kept in the refrigerator (5°C) until used.

Methodology :**Collection of the Plant Material**

The fresh and clean aerial elements of *lantana camara* and *Azadirchta indica* (neem) were collected from A/p Dighanchi, Tal-Atapdi, Dist-Sangli in Maharashtra(India). These aerial parts were then dried for 8-10 days under the shade.

Steps involved in Preperation of Peel off Mask from Bael Fruit Powder And Avarampoo Flower Extract:-**Phase 1.**

In this step, 100 milliliters of distilled water and 23.33 grams of polyvinyl alcohol are added to a beaker. The mixture is then heated until the PVA dissolves while being vigorously stirred continuously and allowed to cool down.

Phase 2.

Phase 1 was supplemented with a 25 ml glycerine and 8.3 ml PEG combination, which was mixed well at a temperature of 40 degrees Celsius.

Phase 3.

After shifting ascorbic acid through a # 32 filter, add 0.83 ml.

Phase 4.

In the phase 3 the mixture, add 1.66 ml of methanol and 0.16 g of ascorbic acid together with distilled water, and thoroughly mix.

Phase 5.

Add powdered medication bael pulp 2.5 gm. Orange peel powder 1 gm with of turmeric powder 0.5 gm and 5 ml of Alovera gel with avarampoo powdered extract 2 ml.

Evaluation Parameters For Peel Off Gel Formulation:-

1. **Organoleptic:-** The consistency and the colour was checked visually. The odour was evaluated manually by smelling the product.
2. **pH:-** 1% solution was prepared and checked for the pH using pH meter.
3. **Washability:-** Formulations were applied on the skin and then ease and extent of washing with water were examined manually.
4. **Spreadability:-** For determination of Spread ability Excess sample was placed between the two glass slides and 100 g weight was placed on the glass slide for 5 min to compress the sample to a uniform thickness. mass (250 g) was added to the pan. The time in seconds required to separate the two slides was taken as a measure of Spread ability.

Formula

$$S = m * l/t$$

Were,

S –Spread ability

m - Weight tied to upper slide

l - Length budge on glass slide

t - Time taken

5. **Status of the peel-off film:-** After drying film was able to remove from the applied site and it was soft to hard. drying time took longer time 30-35mins.
6. **Coverage test:-** Coverage test was then performed by weighing 0.5 g of the gel, placed on a 20 cm × 20 cm glass and then covered with another glass of the same size. Weights up to 125 g were placed on top, and after 1 min, the diameter was measured coverage test was evaluated until 28 days.
7. **Homogeneity Test:-** The homogeneity test was carried out by placing the preparation between two slides and observing their appearance and presence of any aggregates.
8. **Skin irritation study:-** The formulated peel-off should not make any skin irritation or skin sensitization, after its application on the skin or else it will be unsuitable for application on the skin. Hence the Fenu Greek peel off gel formulation was subjected to skin irritation study using Draize modified scoring technique.

Evaluation of primary skin irritation index (PII).

Table no.5:- PII

Evaluations	Score
Non-irritant	0.0
Negligible irritant	0.1 – 0.4

Slight irritant	0.41 – 1.9
Moderate irritant	2.0 – 4.9
Severe irritant	5.0 – 8.0

The score was found to be 0.0. Thus, the formulation was found too non-irritant. The peel Was taken out from the skin surface. It was observed that the peel was removed gently Without breaking.

Result And Discussion:-

Evaluation of Peel off mask

Characteristics of Peel off mask

The physical state, color, odour, taste of the lantana camara extract.

Table No.6: Characteristics of extract

Characteristics	Observation
Physical state	Semisolid
Color	Yellowish Green
Odour	Sweet and slightly spicy

Phytochemical investigation of the extract:-

Phytochemical investigation of the extract Phytochemical investigation of extract of Cassia auriculata revealed the presence of Alkaloids flavonoids, cardiac glycosides, coumarin, resins and other constituents. Many of these compounds have been shown to produce potent antimicrobial and antifungal activities.

Table No.7: Phytochemical Test

SR. NO.	Constituents	Test	End point	Result
1.	Alkaloid	Dragendorff's test	Orange red ppt	+++
		Mayer test	White or yellow ppt	++
		Hager test	Yellow crystalline ppt	+++
2.	Flavonoids	Lead acetate	Yellow ppt	-
		Alkaline test	Yellow ppt	+++
3.	Cardiac glycoside	Legal test	Deep red colour	+++
4.	Saponins	Foam test	Stable foam	+++
5.	Steroids	Salkowski test	Red colour	+++

[+++ -Strongly present, ++ -Moderate present, +Weakly present, - -Completely absent]

Evaluation test of herbal Peel off mask:-

Physical appearance:-

The formulated gel was checked visually for color, appearance and homogeneity.

Table no. 8: Physical Appearance

Test	F1	F2	F3
Physical appearance	Yellowish Green Mask	Yellowish Green Mask	Yellowish Green Mask
Colour	Yellowish Green	Yellowish Green	Yellowish Green
Homogeneity	Absence of aggregates	Absence of aggregates	Absence of aggregates

Measurement of pH:-

The pH of all prepared formulation ranged from 5.7-6.7. The pH of the prepared gel formulation was considered to be acceptable to avoid the risk of irritation upon application to the skin.

Table no. 9:- Measurement of pH

Formulation Code	pH
F1	7.09
F2	7.21
F3	7.20

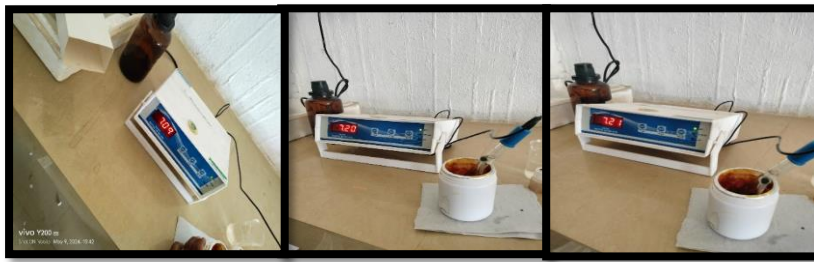


Fig.no.01:-Measurement of pH

Spreadability:-

By spreading 0.5g of the gel over a 2 cm diameter circle that had been premarked on a glass plate and then using a second glass plate, the spreadability of the was determined. A half kilogram of weight was allowed to rest for five minutes on the upper glass plate. After the gel was spread, the circle's diameter was measured.

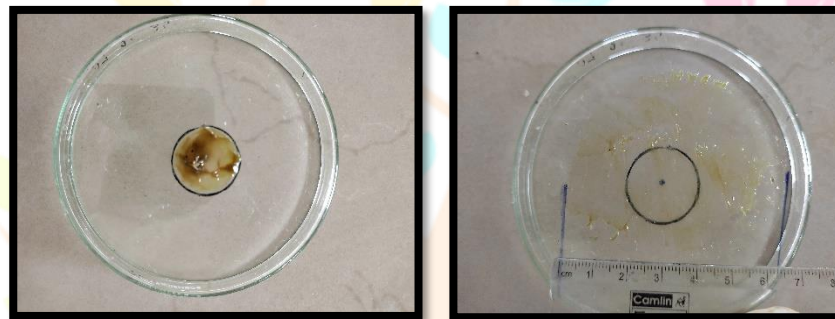


Fig no. 02:- Spreadability of mask

Table no. 10:- Spreadability of mask

Formulation	Spreadability(cm/5min)
F1	4.4±0.01
F2	4.8±0.02
F3	5.1±0.01

Stability testing-

conduct quick stability tests for gel. Store the formulation at room temperature for 7 days, then refrigerate it at 40°C for 1 month. During this time, test all of the assessment parameters and draw the sample once a week.

Table no.11+: measurement of stability study

SR. NO.	Parameter	Duration					
		15 days			30 days		
		F1	F2	F3	F1	F2	F3
1.	Color	Yellowish green	Yellowish green	Yellowish green	Yellowish green	Yellowish green	Yellowish green
2.	Appearance	Semi solid	Semi solid	Semi solid	Semi solid	Semi solid	Semi solid
3.	pH	6.5	6.6	5.8	6.6	6.5	5.8
4.	Drying Time	15.10 min	15.20 min	15 min	15.20 min	16 min	15.30 min

5.	Spreadability (cm/5min)	4.2	4.4	4.6	4.4	4.8	5.1
6.	Skin irritation study (score 0.0 no irritant)	0.0	0.0	0.0	0.0	0.0	0.0

Summary and Conclusion :

In our tests, we found that the formulation had good flow properties and was significantly more stable at room temperature. The Bael fruit dry pulp powder and avarampoo flower extract peel-off mask's formulation received excellent feedback from volunteers. All skin types can use this composition, and it doesn't irritate them. Additionally, the remarks implied that the formulation has a moisturizing, antiacne and smoothening effect on the skin and can enhance skin cleaning by removing dead skin cells from the surface. By assessing other aspects, this data will be utilized for batch scale up and product refinement.

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