IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Preparation And Evaluation Of Herbal Face Pack Using Butterfly Pea Flower

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ABSTRACT

Human skin is becoming increasingly susceptible to aging and atopic dermatitis. Dermatitis, acne, and other skin issues are the most common side effects. Environmental pollution, allergies, and an increase in microbes all contribute to this phenomenon. Herbal remedies are becoming increasingly popular in response to this demand. According to Ayurveda, skin disorders are typically caused by blood pollution. The goal of this project is to develop and evaluate cosmetic herbs. A face mask made with natural ingredients that leaves your skin gleaming. Infused with turmeric, Multani mitti, green tea, Chandan powder, milk powder, and almond powder. The formulations were evaluated using a variety of criteria, including sensory irritation, physicochemical parameters, stability tests, microbiological attack, and mild irritation. So now we have tried to devise the ideal face mask suitable for all skin types.

Keywords: Aging, Atopic dermatitis, Herbal remedies, Ayurveda, Cosmetic herbs, Face mask, Turmeric, *Clitoria Ternatea.*

INTRODUCTION

Herbal cosmetics are increasingly popular for skin treatment due to their recognized benefits for achieving glowing skin. Cosmetics serve to clean, beautify, and enhance skin appearance. Adolescents commonly experience skin issues such as acne, blackheads, pimples, and dark circles, often stemming from factors like toxins in the blood, imbalanced diet, hormonal fluctuations, unhealthy lifestyles, stress, and environmental pollution.[1] Maintaining healthy, clear facial skin is crucial as it constitutes an integral part of overall well-being. Herbal face packs emerge as effective remedies for addressing skin concerns. Their application, typically as a paste or liquid, involves a gentle touch and a waiting period of 10 to 20 minutes for evaporation before removal. Known as Mukha Lepa in Ayurveda, these packs effectively treat pigmentation, scars, blemishes, and acne, while promoting facial blood circulation. Herbal face packs, comprising natural herbs, are simpler, easier to use, and less likely to cause adverse effects.[2,3,4,5] They come in three main designs: plastic masks with wax or latex bases, gel masks (hydrocolloid masks), and dry clay masks. Ideal properties of herbal face packs include smooth paste consistency, non-toxicity, stability in physical and chemical aspects, pleasant aroma, absence of gritty particles, and efficacy in reducing acne, blackheads, dark circles, and other imperfections.[6,7] Advantages of herbal face packs encompass their absence of negative side effects, widespread utilization of herbal products, soothing effect on the skin, prevention of premature skin aging, nourishment of the skin, elimination of dead skin cells, and alleviation of issues like pimples, dark circles, and blackheads. However, herbal face packs may occasionally lead to redness and irritation, as well as inflammation as potential drawbacks.[8,9.10]

REVIEW OF LITERATURE

Table No 1: Review Of Literature

Authors	Year	Main Points
Tejal P et al (2013)	2013	The earliest archaeological evidence of cosmetics was found in Ancient Egypt around 4000 BC. The modern cosmetics industry is a multi-billion

		dollar industry. Various cosmetics include eye makeup, facial cleansing systems, nail polish, lotions, lipsticks, and skincare products.[11]
Christian Surber et al (2016)	2016	Skin reflects origin, lifestyle, age, and health status. The cosmetic and pharmaceutical industry offers a wide range of skincare products and procedures. Skincare products play a significant role in health and nursing care, often based on specific technologies.[12]
Sachin B. Somwanshi et al (2017)	2017	Cosmetics are used for cleansing, beautifying, and promoting attractiveness. Historical use of herbs for skin care. Face skin indicates individual health, requiring balanced nutrition. Ayurvedic facial therapy with herbal pastes.[13]
M. Surya et al (2021)	2021	Cosmetics care for the face and body, modify appearance, and add fragrance. Cosmetics are used for self-expression and identity. Misunderstanding of cosmetics' meaning in Western countries.[14]
Khan AD et al (2019)	2019	The range of cosmetic products includes toothpaste, shampoo, mascara, lotions, perfumes, and more. Makeup refers primarily to colored products altering their appearance.[15]
Gopi Krishna.S et al (2014)	2014	*Clitoria ternatea* plant has various medicinal uses. Contains bioactive compounds like alkaloids, flavonoids, and phenols. Valuable for the pharmaceutical industry for drug preparation.[16]
Simanchal Panda et al (2018)	2018	*Clitoria ternatea* contains bioactive compounds like alkaloids, flavonoids, and phenols. Quantitative estimation of certain compounds for pharmaceutical use.[17]
Ravi Kumar et al (2021)	2021	Herbal face packs provide nutrients, produce a facial glow, and promote skin health. Different skin conditions require specific herbal face packs. Face packs improve blood circulation and provide necessary nutrients for skin growth.[18]
Kiran S. Kudale et al (2017)	2017	Face packs tighten, strengthen, and cleanse the skin. The application produces a rejuvenating sensation. Colloidal and adsorption clays remove dirt and grease from the skin.[19]
Akhila Xavier et al (2022)	2022	Face packs improve blood circulation, rejuvenate skin, and maintain texture and flexibility. Help address issues like wrinkles, acne, pimples, and dark circles. Concerns about skin irritation. Antioxidants prevent skin cell damage and aging.

MATERIAL AND METHOD

Pharmacognostic Investigation:

Plant Material:

Clitoria ternatea (flowers) were chosen as the plant material for the current investigation based on the ethnomedical data and literature review.[20,21,22]

Plant Collection And Authentication Of Plant Material:

In the month of March 2023 in around Akluj Solapur district Maharashtra, India, fresh flowers of *Clitoria ternatea* were collected. A plant was authenticated by a plant taxonomist from the Shankarrao Mohite Mahavidyalaya Department of Akluj.

Analytical Pharmacognosy:

Macroscopic Characterization:

Clitoria ternatea was subjected to macroscopic studies which comprised of organoleptic characteristics of the drug.[23]

Quantitative Micromorphology

1) Length 2) Width 3) L.S.

The head of the flower was observed and carefully peeled off, looking inside the plant. The stamen was detached, and the surface of the anther was observed under the microscope. The top of the stigma was drawn carefully. The ovary was cut open and observed under a microscope. These factors were assessed by established WHO recommendations and are thought to be extremely helpful in the quality control of crude medication.[24,25]

Figure No 1: L.S. of *clitoria ternatea* flower

Figure No 2:*clitoria ternatea* flower

Table No 2: Taxonomical classification of *clitorea ternatea*

Kingdom	Plantea
Division	Mangoliophyta- vascular plants
Class	Mangnoliopsida- dicotyldon
Subclass	Rosidae
Order	Fabales
Family	Fabaceae lindl- pea family
Genus	Clitoria L.- pigeonwings
Species	*Clitoria ternatea L - asian pigeonwings*

Table No 3: Plant Material and uses

Ingredient	Common Name	Scientific Name	Family	Uses
Clitoria Ternatea	Asian Pigeon Wings, Blue Bellvine, Blue Pea, Butterfly Pea	Clitoria Ternatea	Fabaceae	High in antioxidants beneficial for skin health. Delays skin aging, prevents premature aging, and enhances the overall tone and texture of the skin.
Multani Mitti	Fuller's Earth	Solum Fullonum	Euphorbiaceae	Cleanses skin by removing dirt and pollutants. Removes excess sebum and oil. Boosts radiance. Treats tanning, infections, rashes, and sunburn.
Chandan	Sandalwood	Santalum Album L.	Santalaceae	Has a cooling and calming effect on the skin. Shields skin from environmental pollution. Keeps skin cool and healthy. Antibacterial properties help in removing scars and treating various skin issues.
Milk Powder	---	---	---	Concentration of vitamins and minerals beneficial for skin health. Skin lightening properties. Acts as a skin purifier. Removes contaminants like blackheads and whiteheads. Abundant in lactic acid, naturally cleanses and brightens skin.
Turmeric	Haldi	Curcuma Longa	Zingiberaceae	Filters blood and promotes wound healing through antibacterial properties. Heals skin ailments, and reduces inflammation and allergies.
Green Tea	Tea Plant, Tea Shrub	Camellia Sinensis	Theaceae	High polyphenol content fights aging. Antioxidant properties combat free radicals,

				which contribute to aging and various skin issues.
Almond	Badam	Prunus Amygdalus	Rosaceae	Rich source of Vitamin E and retinol, making skin soft, supple, and smooth. Anti-aging properties reduce wrinkles and fine lines. Beneficial for skin health.

Table No 4: Composition of herbal face pack

Sr.No.	Constituents	Quantity
1	*Clitoria ternatea*	40gm
2	Multani mitti	20gm
3	Chandan powder	20gm
4	Milk powder	10gm
5	Turmeric	10gm
6	Green tea	5gm
7	Almond powder	5gm

Figure No 3: Plant Materials

All the herbal ingredients are in dry form and ground to make a fine powder by using a size reduction mill. All the required herbal powders for fruit mask preparation were accurately weighed individually by using a digital balance. The quantity and composition are listed in the Composition of the herbal face pack.

- **Mixing:** Using a mixer, all of these high-quality materials were completely blended to create a fine, uniform powder.
- **Sieving:** To obtain an adequate amount of fine powder, this fine powder was passed through sieve number 100.
- **Collection and Storage:** A suitable container was used to collect the powder mixture, store it, and use it as a basis for evaluation criteria.

Evaluation Of Herbal Face Pack:[26,27,28,29]

Table No 5: Evaluation Of Herbal Face Pack

Evaluation Aspect		Details
Organoleptic Parameters		Evaluated for color, odor, appearance, texture, and smoothness manually to assess the physical properties of the herbal face pack.
Physicochemical Evaluations	i) pH	Measured using a digital pH Meter with the average value noted.
	ii) Loss on Drying	**Procedure:** 1) 1.5gm of powdered drug placed into a weighed flat and thin porcelain dish. 2) Dried in an oven at 100°C or 5°C. 3) Cooled in a desiccator and loss in weight recorded as moisture.
	iii) Ash Content	**Procedure:** 1) Weighed and ignited crucible. 2) About 2gm of the powdered drug was placed into the crucible. 3) Heated with a burner until all carbon is burnt off. 4) The weight of the ash was calculated and the percentage of total ash content was determined.
	iv) Particle Size Determination	**Procedure:** 1) Standard sieve set selected, arranging them with coarse on top and fine at bottom. 2) 50gm of sample weighed and placed on sieve no. 10. 3) Sieve set fixed on sieve shaker and shaken for 20 min. 4) Sample retained on each sieve collected, weighed, and reported.
Determination of Antioxidant Activity		Estimated free radical scavenging activity using DPPH (1, 1-Diphenyl-2, Picryl-Hydrazyl) free radicals. Test compounds mixed with methanolic DPPH at different concentrations and incubated. Observations made for discoloration from purple to yellow and pale

	pink. Radical scavenging activity is calculated using a specific equation.
Determination of Antibacterial Activity	Samples screened for antibacterial activity against Escherichia coli (Gram-negative), Staphylococcus aureus (Gram-positive), and Proteus Valgaris (Gram-negative) organisms using the disc-diffusion method on nutrient agar media. Nutrient agar media was prepared and inoculated with cultures, followed by incubation and measurement of inhibition zones.
Determination of Rheological Properties	Physical parameters such as tapped density, bulk density, angle of repose, Hausner's ratio, and Carr's index were observed and calculated for the formulation.
Phytochemical Screening	Aqueous extract of the herbal face pack was evaluated for the presence of different phytoconstituents following standard procedures.
Irritancy Test	Applied a specific quantity of prepared face packs on a marked area of the dorsal hand and recorded application time. Examined irritation, erythema, and edema at regular intervals up to 24 hours.
Stability Studies	Observed changes in color, odor, texture, and smoothness at specified stability conditions except for pH. Showed slight change in pH of formulation at 400.

RESULTS

The following evaluation parameters were performed to ensure the superiority of the prepared face pack.

1. **Organoleptic parameters:**

Table No 6: Organoleptic parameters

Sr.no.	Parameter	Observation
1	Colour	Pale yellow
2	Odour	Pleasant
3	Appearance	Smooth
4	Texture	Fine
5	Smoothness	Smooth

2. **Physicochemical Evaluation:**

Table No 7: Physicochemical Evaluation

Sr.no	Parameter	Observation
1	PH	5.3
2	LOD	3.33
3	Ash content	89±0.320
4	Particle size	26.4±5.44

3. **Determination of antioxidant activity:**

Table No 8: Determination of antioxidant activity

Antioxidant activity by DPPH (by 96well method)				
Sample code	**Concentration**	**Absorbance**	**Mean**	**% inhibition**
Control	---	2.101 1.912 1.813	1.942	---
Std ascorbic acid	1000ugm	0.150 0.106 0.120	0.125	93.56
Sample -A	100ul	0.788 0.750 0.749	0.762	60.76

4. Antibacterial activity:

Table No 9: Antibacterial activity

Sr.no.	Concentration	Staphylococcus Aureus	Escherichia Coli
1	100ug/ml	2 mm	1 mm
2	200 ug/ml	4 mm	6 mm
3	300 ug/ml	7 mm	7 mm
4	400 ug/ml	8 mm	2 mm
5	500 ug/ml	9 mm	6 mm
6	Standard	10 mm	20 mm

5. Rheological evaluation:

Table No 10: Rheological evaluation

Sr.no.	Parameter	Observation
1	Tapped density	0.78 g/ml
2	Bulk density	0.63g/ml
3	Angle of repose	0.70
4	Hausner‟s ratio	1.25
5	Carr‟s index	20%

6. Phytochemical Screening:

Table No 11: Phytochemical Screening

Sr.no.	Parameter	Observation
1	Carbohydrates	+
2	Alkaloids	+
3	Glycoside	+
4	Tannins	+
5	Volatile oil	+
6	Phenol	-
7	Flavonoids	-

7. Irritancy test:

Table No 12: Irritancy test

Sr. no.	Parameter	Observation
1	Irritation	No
2	Erythema	No
3	Edema	No

8. Stability Studies:

Table No 13: Stability Studies

Sr.no.	Parameter	Observation
1	Colour	No change
2	Odour	No change
3	PH	5.3
4	Texture	Fine
5	Smoothness	Smooth

DISCUSSION

Quantitative measurements were made, individual particles were recognized, and chemical and microscopic properties were examined. The formulation's consistent pH of very slightly alkaline was in keeping with normal skin physiology. Regarding the angle of repose, the flow attribute has been classified in compliance with Indian Pharmacopoeia norms.

CONCLUSION

The dry powders in the combined pack exhibited suitable flow properties for the face pack. According to an organoleptic investigation, the pack smells well and is smooth. The trial participants require non-toxic therapies for a range of skin conditions. Herbal face packs are considered a long-lasting and efficient way to improve the appearance of skin. The advantage of using herbal cosmetics is that many of their substances

are effective for a long time and are non-toxic, which reduces allergic reactions. Herbal face packs are used to help keep skin supple, revitalize muscles, and increase blood circulation.

FUTURE SCOPE

Herbal skin care products have gained immense popularity in the global market over the past several decades due to their low cost and few adverse effects on the skin, making them a top choice. Herbal face packs are a superior option for skin care cosmetics since they primarily maintain skin elasticity, remove dead skin, increase blood circulation, clear pores, and eliminate blackheads. Because the blooms of *Clitoria Ternatea* have strong antioxidant qualities. Accordingly, our research has shown that the flower face pack of *Clitoria Ternatea*, or butterfly pea plant, had strong antioxidant activity. Thus, this may be a useful strategy for treating hyperpigmentation and early aging. Although further study is required to demonstrate the effectiveness of the herbal face pack, the results thus far are positive for the product's continued development.

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