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Formulation and Evaluation of Face Pack Containing Chamomile and Other Natural Ingredients

P. Susmitha, M. Ramalakshmi, V. Sreekala, A. Sameere Krishna, O. Shabana, Naresh Gorantla*, V. Sreedhar

Department of Pharmaceutics, Balaji College of pharmacy, Ananthapuramu, Andhra Pradesh, India.

ABSTRACT

The present work was aimed to formulate face pack containing Chamomile and Rice flour as main ingredient and other natural ingredients like liquorice powder, rose petals powder and Orange peel powder. Five different formulations of face pack was formulated and evaluated for physical parameters, Flow properties, irritation studies and for stability studies and the all formulations shown good physical properties. Patch test was performed by applying the face pack with rose water. All the formulations shown good physical properties and pH near to neutral. The flow properties were good for the five formulations. The formulation F2 shown mild to moderate irritation during Primary irritation, Delayed hyper sensitivity and Photo irritation and the remaining formulations were found to be completely free from irritation. During stability studies all formulations shown good physical properties except a slight change in pH. The flow properties of the formulations after stability studies were changed slightly. We conclude the present study that the face pack containing natural ingredients is a good product for human use and further studies are needed to know the possible benefits of the face pack.

Keywords: Face pack, Flow properties, Patch test, Stability studies

ARTICLE INFO

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*Corresponding Author

Naresh Gorantla
Department of Pharmaceutics,
Balaji College of pharmacy,
Ananthapur, Andhra Pradesh, India.
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1. Introduction

Cosmetic beauty masks are preparations topically applied, primary to the facial area, for the purpose of achieving a tightening sensation and a cleansing effect in the areas to which the product is applied. Natural Face Packs are slower way to uplift the skin around facial and neck to make it appear younger. There are two realities that everyone has to face one day and everyone should know the same beforehand; first of all wrinkles and fine lines and are impossible to avoid. Secondly, if or not you can do something about them once they appear on face. Homemade natural face packs and masks make way for smooth, radiant and silky skin [1]. In The present study an attempt was made to formulate face packs of different natural ingredients like Chamomile for its exfoliant and anti wrinkle property, Liquorice for its skin lightening and glowing skin, Rice flour for its skin lightening black head and dark circles remover, Rose petals for its natural moisturizer, black head remover and anti- bacterial property, orange peel for its anti-acne and smoothens the skin and Rose water for its anti-oxidant and moisturizer and the formulations were evaluated for Physical parameters like Color, Odor, pH, Consistency and Feel and Patch test and Stability studies for one month [2].

2. Materials and Methods

Materials: The materials used in the present study was purchased from the local market of Ananthapuramu. Chamomile, Rose petals and Orange peel were dried properly in shade and powdered and used for the preparation of face packs.

Methods:

Method of preparation of Face pack:

With the varying concentrations of all ingredients five different formulations were prepared and each formulation was named as F1 to F5 [Table 1]. The ingredients of face pack were weighed accurately according to the concentrations of different formulations and then ground into fine powder. The ground ingredients were sieved separately by using sieve #120. Then the all ingredients were mixed by serial dilution method [3]. Further the mixed powder is again passed through sieve #120 so as to break the lumps and to get a fine powder [4]. Then the prepared face pack was packed into a self-sealable polyethylene bag, labeled and used for further studies.

Method of Evaluation of face packs:

The prepared face packs were evaluated for the following parameters:

- Physical parameters
- Flow properties:
- Angle of repose, Bulk density and Tapped density
- Test for irritation
- Stability studies

Physical parameters:

All formulations were evaluated for physical parameters like Color, Odor, pH, Consistency and Feel [5].

Flow properties:

Angle of repose: The angle of repose, or Critical angle of repose, of a granular materials is the steepest angle of

descent or relative to the horizontal plane to which a material can be piled without slumping. It is given by the equation:

$$\begin{aligned} \tan \theta &= h/r \\ &= \tan^{-1}(h/r) \end{aligned}$$

Where,

- = Angle of repose
- h = Height of the powder
- r = Radius of the heap base

Bulk Density:

It is defined as weight of the dry powder divided by the bulk volume of the powder. The bulk density of a powder is the ratio of the mass of an untapped powder sample and its volume including the contribution of the inter particulate void volume. Hence, the bulk density depends on both the density of powder particles and the spatial arrangement of particles in the powder bed[6].

$$\text{Bulk density} = \frac{\text{Weight of the dry powder}}{\text{Bulk volume of the powder}}$$

Tapped Density:

The tapped density is an increased bulk density attained after mechanically tapping a container containing the powder sample. The tapped density is obtained by mechanically tapping a graduated measuring cylinder or vessel containing the powder sample. After observing the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped, and volume or mass readings are taken until little further volume or mass change is observed [7].

$$\text{Tapped density: } \frac{\text{Weight of the dry powder}}{\text{Tapped volume of the powder}}$$

Test for irritation:

Non-irritancy of the preparation is evaluated by patch test. This test is performed to evaluate the safety of face packs on application. Even though the formulations contain all natural ingredients, from the safety point of view we performed this test for three parameters i.e., Primary irritation test, Delayed hypersensitivity and Photo irritation or allergy and the procedure for all test is as follows:

Primary irritation:

In this test 24 human volunteers are selected. Definite quantities of prepared face packs were applied in combination with purified water and honey separately on the back or volar forearm region for 30 days. Prior to the application of face pack any signs of irritation observed are noted. No visible reaction or erythema or intense erythema with edema and vesicular erosion should occur. All seven formulations were evaluated by same procedure and possible reactions with different degrees like-No Irritation, + Mild irritation, ++ Moderate irritation, +++ High[8].

Delayed hypersensitivity:

Delayed hypersensitivity test is performed with the same procedure as in primary irritation test by increasing the application time and observance time. After washing of face pack from the skin the reactions were measured for 2 Hrs of time and noted down [9].

Photo irritation/ allergy: Some ingredients may produce an allergic reaction only when exposed to light (usually

UV). This test is aimed to know the possible photo allergic reactions of the prepared face packs on exposure to sun light on application. All the formulated face packs were applied as in the Primary irritation test and the individuals are asked to expose themselves for sun light and possible reactions in the terms of itching, allergy, irritation and signs of redness after washing is measured and noted down[10].

Stability studies:

The prepared formulations are subjected to stability studies by storing at different temperature conditions for the period of three month. All the formulations were packed in glass vials separately and stored at different temperature conditions viz., Room temperature, 35° C and 40° C and were evaluated for physical parameters like Color, Odor, pH, Consistency, feel and Flow properties [11, 12].

3. Results and Discussion

The prepared formulations shown colors like F1 Pale yellow, F2 Light yellow, F3 Pale yellow, F4 Yellow and F5 Yellow. All prepared formulations were having good acceptable odor which is desirable for the cosmetic formulations. The pH all formulations lie in the range of 6.5

to 6.9 which is near to neutral [Table 2]. All formulations shown free flowing properties which are desirable for measuring the required quantity of powder [Table 3]. The prepared formulations were evaluated for its irritation effects by patch test with Rose water. Among all formulations, F2 shown mild signs of irritation during primary irritation test, delayed hypersensitivity test and photo irritation test. Among all formulations F2 showed mild irritation on 5th day, 10th day, 15th day, 30th day during primary irritation studies. During delayed hypersensitivity studies and Photo irritation studies we found that F2 shown mild to moderate irritation. During stability studies a slight change in pH was observed for all formulations which are stored at 40°C and we found that at room temperature and at 35°C formulations do not show changes in pH. A slight change in odor has observed after one month of stability studies for the formulation F2, F3 and a slight change in color has observed for the formulations F1 and F2 at 35°C and 40° C. The flow properties of formulations showed a slight change after three months of stability studies. Major change observed in the formulations that were stored at 40° C [Table 5].

Table 1: Composition of different formulations of Face pack

S.No	Ingredients	F ₁	F ₂	F ₃	F ₄	F ₅
1	Chamomile	6.5	6	6.5	6.5	8.33
2	Liquorice	12.5	12.5	6	6.5	8.33
3	Rice flour	50	50	50	50	50
4	Rose petals	6	6.5	12.5	12.5	8.33
5	Orange peel	25	25	25	25	25
6	Rose water	QS	QS	QS	QS	QS
	Total	100	100	100	100	100

Table 2: Results for physical Parameters of Formulations F1 to F5

S.No	Physical Parameters	F ₁	F ₂	F ₃	F ₄	F ₅
1	Color	Pale yellow	Light yellow	Pale yellow	Yellow	Yellow
2	Odor	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
3	pH	6.7	6.8	6.7	6.9	6.8
4	Consistency	Free flowing powder	Free flowing powder	Free flowing powder	Free flowing powder	Free flowing powder
5	Feel	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Table 3: Results of Flow properties of Formulations F1 to F5

S.No	Formulation	Angle of Repose (°)	Bulk Density (g/ml)	Tapped Density (g/ml)
1	F1	25.12 ± 0.24	0.306 ± 0.06	0.326 ± 0.03
2	F2	26.95 ± 0.15	0.312 ± 0.04	0.335 ± 0.02
3	F3	26.33 ± 0.18	0.358 ± 0.05	0.385 ± 0.04
4	F4	27.12 ± 0.26	0.384 ± 0.04	0.384 ± 0.05
5	F5	27.20 ± 0.14	0.457 ± 0.05	0.334 ± 0.06

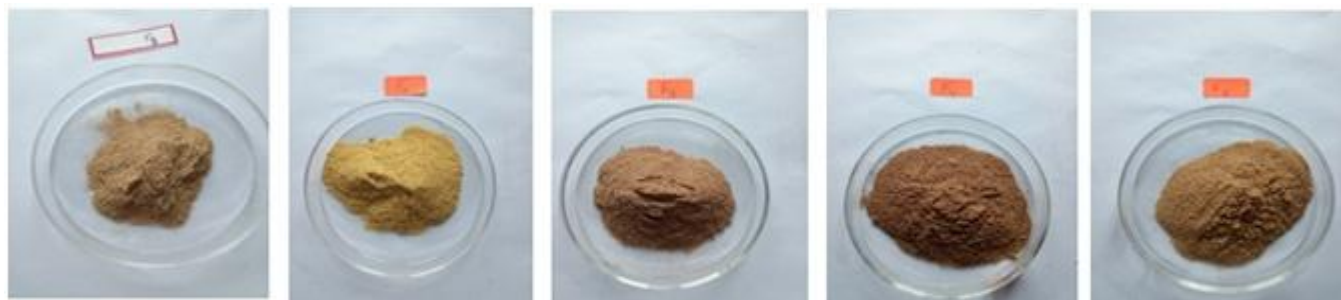
Table 4: Results of Test for irritation of Formulations F1 to F5

S.No	Parameters	F1	F2	F3	F4	F5
1	Primary irritation	-	+	-	-	-
2	Delayed hyper sensitivity	-	++	-	-	-
3	Photo irritation	-	++	-	-	-

-None, +Mild, ++Moderate, +++ High

Table 5: Results of Flow properties during stability studies of F1 to F5

S.No	Formulation	Storage condition	Flow Properties		
			Angle of Repose	Bulk density	Tapped density
1	F1	RT	26.43 ± 0.14	0.312 ± 0.04	0.326 ± 0.03
		35±0.5 ⁰ c	26.78 ± 0.18	0.324 ± 0.05	0.342 ± 0.04
		40±0.5 ⁰ c	28.24 ± 0.34	0.340 ± 0.04	0.368 ± 0.05
2	F2	RT	27.76 ± 0.32	0.294 ± 0.05	0.312 ± 0.04
		35±0.5 ⁰ c	27.89 ± 0.29	0.310 ± 0.04	0.324 ± 0.05
		40±0.5 ⁰ c	29.43 ± 0.35	0.312 ± 0.05	0.346 ± 0.05
3	F3	RT	27.20 ± 0.24	0.384 ± 0.06	0.392 ± 0.03
		35±0.5 ⁰ c	26.89 ± 0.32	0.365 ± 0.04	0.378 ± 0.06
		40±0.5 ⁰ c	29.54 ± 0.28	0.348 ± 0.05	0.386 ± 0.04
4	F4	RT	28.43 ± 0.32	0.306 ± 0.05	0.328 ± 0.03
		35±0.5 ⁰ c	28.87 ± 0.16	0.312 ± 0.04	0.343 ± 0.05
		40±0.5 ⁰ c	29.34 ± 0.24	0.324 ± 0.04	0.346 ± 0.04
5	F5	RT	26.42 ± 0.18	0.314 ± 0.05	0.332 ± 0.03
		35±0.5 ⁰ c	27.14 ± 0.21	0.312 ± 0.04	0.334 ± 0.04
		40±0.5 ⁰ c	28.24 ± 0.23	0.342 ± 0.05	0.368 ± 0.04

**Figure 1:** Different Formulations of Face pack

4. Conclusion

The present study was aimed to formulate face pack containing natural ingredients like chamomile, liquorice, rice flour, rose petals and orange peel. Five different formulations were prepared and evaluated for physical parameters like Color, Odor, pH, Consistency, Feel, Flow properties and irritation. Based on the results obtained we conclude that among all formulations the formulation F2 shown mild to moderate irritation during primary irritation, delayed hypersensitivity and photo irritation and the remaining formulations were completely free from irritation. Stability studies were conducted for 3 months and we found that the two formulations were good in all aspects except a slight change in odor, pH and a slight change in the flow properties. These face packs were formulated with the naturally available ingredients and we found good properties for the face packs and further Optimization Studies are required on this study to find the useful benefits of Face Packs on human use as Cosmetic Product.

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