



## IRRITATION TEST AND EFFECTIVENESS OF FACIAL HUMIDITY SKIN FROM PEEL OFF GEL MASK BASED OF DATE PALM SEEDS POWDER (*Phoenix dactylifera*)

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### Abstract:

Dry skin is the main problem of skin damage such as scaly, peeling, cracked and itchy skin, this is because the skin loses fluids due to weather changes and as we age we experience a decrease in the amount of oil and water on the skin. Facial skin care is done, one of which is by using a peel off gel mask of dates palm powder. The fat content is useful as a facial skin moisturizer. This study aims to determine the formula of the peel off gel mask which has determine its safety and effectiveness in moisturizing facial skin. The peel off gel mask was made into 3 formulas with the concentration of date palm seeds powder 1% (FI), 2% (FII) and 3% (FIII). Procedures in this study include irritation test, hedonic test and facial skin moisture test using a skin analyzer compared before and after use. Peel off gel mask choco milk as a positive control. The results showed that FII (2%) corresponding the requirements of no irritation occurs compared to other formulas. Testing the effectiveness of facial skin moisture showed that FII (2%) was able to increase the water content after use and the water content was higher than the positive control. Results it can be concluded that the FII has safe for use and effective in moisturizing facial skin.

**Keywords :** Peel off gel mask, dates, irritation.

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### 1. Introduction

Dry skin occurs when the epidermal layer of the skin is not properly hydrated, so the skin becomes scaly, peeling and cracked, itchy (xerosis). The skin becomes dry with age, this is because the skin has decreased the amount of oil and water as a natural lubricant for the skin. Dry skin have high potential to the occurrence of skin damage, so it is easier to infected by bacteria, eczema, to the cracks of bleeding skin (1,2).

The factors that can cause dry skin come from genetics, skin structure conditions, environment / weather, skin diseases, improper soap selection, sun exposure, use of air conditioners. Dry skin problems can be avoided by proper and routine facial skin care, one of them is to use a peel off gel mask with natural ingredients from date seed powder to get facial skin that is moist, smooth and tight (1)

Dates seeds contain the highest fat component of about 9 grams / 100 grams compared to date meat. The use of olive oil as a base gel peel off mask also contains unsaturated fatty acids, maristic acid, arachidic acid, itic acid, stearic acid, and lignostearate which can function as emollient (3)

Peel-off gel powder mask of dates compared to peel-off gel masks circulating in the market is one of the practical masks, because after drying the mask can be immediately removed without the need to be rinsed and has a high enough water content so that it can hydrate the stratum corneum (4).

PVA will form a strong and elastic peel-off layer so that contact with the skin is good and easily dries without the aid of other ingredients (4)

## 2. Methods

### *Making date powder*

Take 5 kg of dates and then wash thoroughly using running water and then put into the oven at a temperature of 100°C for 2 hours. After constant weight, date seeds are grinded until smooth. After refining the date seed powder is sieved with a 200 mesh sieve (3)

### *Peel Off Mask Formulation Design*

material	Concentration (%)					Function
	F1	F2	F3	K +	K-	
Dates Seed Powder	1	2	3	Choco milk gel	-	Skin moisturizer
PVA	5	10	15		1.5	Gelling agent
PVP	5	5	5		5	Binder
Propylenglycol	10	10	10		10	Humectant
Olive oil	5	5	5			Emolient
Methyl Paraben	0.2	0.2	0.2		0.2	Preservative
Propil Paraben	0.1	0.1	0.1		0.1	Preservative
Oleum Rosae	0.1	0.1	0.1			Fragrance
70% Ethanol	15	15	15		15	Solvent
Aquadest	Ad 100	Ad 100	Ad 100		Ad 100	Solvent

### *Preparation of Gel Peel Off Mask Powder Dates*

Preparation of peel-off gel mask preparations begins with the development of PVA as much as 5 grams (period A) in a container with warm aquadest (80°C), then in another place PVP as much as 5 grams is developed in cold aquadest to expand (period B). Methyl paraben as much as 0.2% and propyl paraben as much as 0.1% were dissolved into 10 mL of propyleneglycol and 5 ml of olive oil (period C). Masses B and C are successively fed into material A then stirred until homogeneous at a constant speed. As much as 1, 2, 3 grams of date powder were added little by little to the mixture of ingredients A, B and C while continuing to stir, then added 70% ethanol as much as 15 mL and fragrance little by little, stirring again, then put into a container (5)

### *Irritation Test and Hedonic Test*

- a. Irritation Test. Irritation test with a patch test method, by attaching a mask to the skin with a piece of wattman paper coated with polyethylene film. Patch tests are carried out on the back of the body for 48 hours, after which they are removed and then marked. Results are assessed 25-30 minutes after removal. An irritant reaction was observed in the form of heat, itching, or burning, then noted (6,7)
- b. Hedonic Test. preference tests (aroma parameters, skin sensation, and color preparations) used 20 panelists who were treated to examples of active gel peel off charcoal mask preparations (8).

**Table 2** Numeric scale on the stock assessment test

Hedonic Scale	Numeric Scale
Very like it	5
Really like	4
Rather like	3
Neutral	2
I don't like it	1

***Emollient or facial skin moisture test***

Emollient test / moisture test for facial skin is tested with a skin analyzer. Observations were made of 10 women aged 20-30 years (6,7). Where the panelist's facial skin before being applied to the peel off gel mask was tested for its skin moisture use with a skin analyzer, recorded the percentage of water content, then compared to the percentage of its moisture content after 15 minutes of using the peel off gel mask. If there is an increase in the percentage of water content, the preparation has effectiveness as a facial skin moisturizer, if there is no increase in the percentage of water content, the preparation does not have effectiveness as a facial skin moisturizer.

***Test the Effectiveness of Gel Peel Off Mask in Cleaning Dirt***

Tests carried out on 10 panelists for 30 days, every 1 time in one week. Check the facial skin type and proceed with applying a mask. The mask that has dried is removed and counted the number of blackheads raised under a digital microscope. Furthermore, facial skin masks that have been applied are compared on a scale of facial brightness.

**3. Results And Discussion**

***Irritation Test***

The irritation test aims to see the presence or absence of irritation that appears on the skin after the preparation is applied. The choice of the patch test method is due to the results obtained in determining the most accurate irritation from the irritation test method using test animals or in vitro (9).

Based on testing that has been carried out on all panelists showed that there are no symptoms that arise such as swelling, itching and sore on the skin. This can be caused by the influence of the pH of the gel peel off mask preparation of date powder that falls into the skin's pH range, this is also due to date seed powder containing protein and fat.

***Hedonic Test***

The hedonic testing aims to evaluate the panelists' acceptance of the product produced by the parameters of aroma, sensation in the skin and the color of the preparation. According to the Indonesian Ministry of Health (1985), the way to determine sample sizes is to use the Slovin formula. The test results can be seen in Table 4 below.

**Table 3.** Percentage of Hedonic Test Results of Gel Peel Off Mask

Sample	Rating result (%)				
	Very Liked (5)	Likes (4)	Neutral / Ordinary (3)	Dislikes (2)	Very Dislike (1)
F1	0	0	0	0	100
F2	100	0	0	0	0
F3	0	0	0	100	0

Based on the percentage obtained, the percentage is calculated based on the numerical scale and sorted from the highest value, the results can be seen as in Tadoorbell 4 follows:

**Table 4.** Data on Hedonic Test Results Based on Numerical Scale and Sequence of Panelists' Preference

Sample	total	Percentage (%)	ket
F1	0	0	Dislike
F2	10	100	Most liked
F3	0	0	Dislike

Based on numerical scale experimental data, it was found that FII was most preferred, FI and FIII were not preferred. On a hedonic scale, statements that should be more are very like.

***Emollient or facial skin moisture test***

From the observations of emollient test / facial skin moisture test conducted on 10 women aged 20-30 years (6,7). Where panelist facial skin after applying a peel off gel mask has increased water content from 40.7% to 45.8% an increase of 5%, this shows that the preparation has effectiveness as a

moisturizer for facial skin. Where compared to commercial products that the increase was only by 2%, while the peel-off gel powder mask of dates had a two-fold increase from commercial products.

**Table 5. Test results of the effectiveness of the peel off gel seed mask as a facial moisturizer**

Panelist	% Water content	
	Before	After
1	39	45
2	37	45
3	47	50
4	32	38
5	45	49
6	39	43
7	45	51
8	38	45
9	37	40
10	48	52
Positive control	46	48
Negative control	48	46

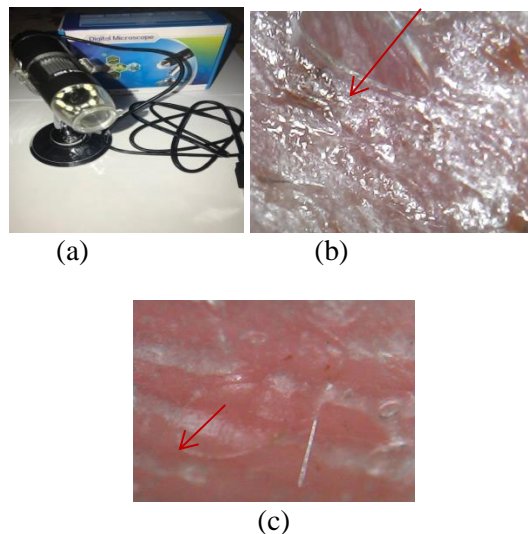


**Figure 2.** Skin analyzer

**Test the Effectiveness of Gel Peel Off Mask in Cleaning Dirt**

The effectiveness test of peel off gel seed mask mask is done to clean the dirt on the face by observing the changes that occur in skin color and the number of blackheads raised. Clean skin is one of the characteristics of healthy skin (10). From the results of the panelist moisture test results that 10 panelists have normal skin with a moisture content between 30% - 40%.

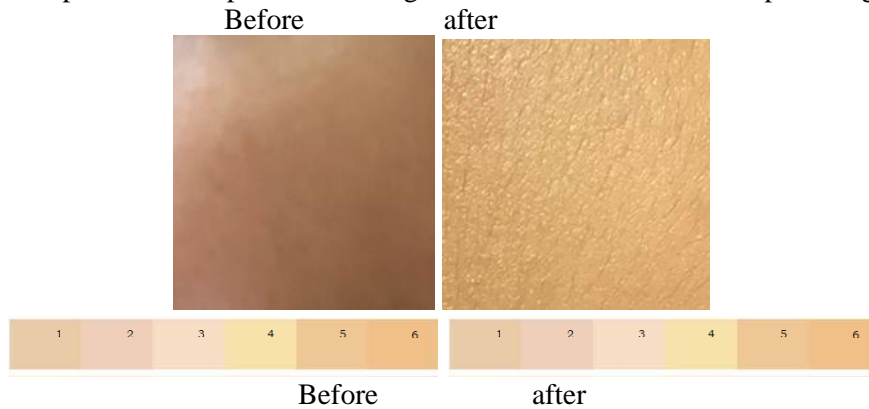
Observation of blackheads raised on the peel off gel mask of date powder was carried out by comparing the results of impurities raised on masks that were not given date powder (K-) and other brand masks (K+). The following results are obtained after the use of a mask that is seen using a digital microscope.



**Figure 3.** a) Digital microscope, b) The results before applying the peel off gel powder mask, c) The results after using the peel off gel powder mask

The results obtained after the use of peel-off gel mask of dates powder contained blackheads raised. This can be influenced by the existence of PVP and PVA mask base capabilities works by moving to the surface of the film layer that coats the surface. The adsorbate molecule also moves from the outer surface of the adsorbent and spreads to the pores of the adsorbent. So that the adsorbate sticks to the surface of the PVP and PVA pores.

Panelists who used peel off dates powder had a change in the level of skin color brightness in the second week until the fourth week from scale 6 shifted to scale 3. Following are the results of panelist skin color photos that experienced changes before and after the use of peel off gel powder :



#### **4. Conclusion**

Based on the results of research conducted, it can be concluded that the peel off gel mask on FII (concentration of date seed powder 2%) was effective in moisturizing facial skin.

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