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Formulation and Evaluation of Non-Aromatic Sunscreen Moisturizer Cream for Hajj and Umroh Personal Care

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Cream, Sunscreen, Moisturizer, Non Aromatic, Hajj Care

A b s t r a c t

Background: *Protective moisturizer cream can be used by Hajj and Umrah pilgrims. They can use sunscreen moisturizer cream as a moisturizer and sunscreen to protect their skin from exposure to the sun because it does not contain alcohol or certain fragrances.* ***Objective****: This research aims to determine the halalness of ingredients, the presence or absence of aromatic content, the suitability of physical characteristics, and the effectiveness of the SPF value of halal non-aromatic Sunscreen moisturizer cream preparations using pre-experimental design research methods.* ***Methods****: The physical characteristics were evaluated, including organoleptic, homogeneity, spreadability, adhesive power, pH, and viscosity.* ***Results:*** *The organoleptic test results show that the Sunscreen moisturizer cream preparation has a yellowish-white color, is scentless, and has a soft texture. Homogeneity testing shows that this preparation is homogeneous. The spreadability test value of the preparation is 6.50 cm; the sticking power value is 3.77 seconds; the pH value is 5.00; the viscosity value is 5.64 cPs. The research results also show that the preparation contains halal ingredients and does not contain fragrances. Halal non-aromatic sunscreen moisturizer cream. Formula SPF value 38.332 ± 1.526 with ultra protection type.* ***Conclusion:*** *All evaluations of the physical characteristics of the Sunscreen moisturizer cream preparation have met the requirements for a good cream preparation, except for the viscosity test. It contains halal ingredients and has ultra-protective protection against UV light.*

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INTRODUCTION

Indonesia is a country with the most prominent Muslims in the world. According to a report by *The Royal Islamic Strategic Studies Center* (RISSC) or MABDA, there are 231.06 million Moslems in Indonesia. That number is equivalent to 86.7% of Indonesia's total population. With this large population, most Indonesians want to go to Saudi Arabia, especially Mecca, to carry out the Hajj and Umrah pilgrimages. This is based on Weather Spark, a site providing country temperature averages yearly. Summer in Mecca lasts from April to October. Hajj and Umrah are acts of worship that require good physical health. It is important for Indonesian people who will perform Hajj and Umrah in Mecca to be aware of this. The climate in Saudi Arabia is significantly different from that in Indonesia. Saudi Arabia has a desert climate, characterized by dry-hot weather temperatures than tropical countries like Indonesia. Indonesians mostly live in an environment with average temperatures ranging from 24°C to 26°C. The implementation of Hajj and Umrah occurs in Saudi Arabia and involves average daily temperatures exceeding 30°C.

Enough poses a challenge for several Muslims who want to perform the Umrah from Indonesia, where the coldest temperature is 28°C, which is still considered hot for Indonesians We found *Sunscreen moisturizer cream* to be the solution to the problems. Sunscreen moisturizer cream is a product that does not work to protect the skin from exposure to UV and moisturize the skin. Method *work sunscreen moisturizer cream* protects skin, namely moisturizing the skin and *protective* properties *of preparations* that function as sunscreen to reflect ultraviolet rays or hinder ultraviolet and veil sun, which absorbs light Ultraviolet or absorbent Ultraviolet. [1]

Materials used as raw materials for medicines are halal. The advantage of the formulation in this research is that it does not use additional ingredients in the form of fragrances, but it does not leave an unpleasant odor in the preparation, so the formulation developed is declared non-aromatic. However, it should be noted that not all raw materials, processes, tools, and facilities used meet the provisions of Sharia Islam except for materials included in materials prohibited by Islamic law (Al-Qur'an, Hadith, Ijma 'Ulama, and Qiyas). The requirements for halal medicine that must be met are non-pork ingredients and their derivatives, free of alcohol, free of side effects, free of toxins, and free from human internal organs and placenta. And urine. Based on the Department of Religion[2], as stated in KEMENAG RI No. 518 of 2001 regarding inspection and determination of halal ness, the definition of halal contains no elements or materials that are haram or prohibited for consumption by Muslims, and their processing No contrary to Sharia Islam[3.] Many medicines and cosmetics circulating in the community still need to be convinced about their halal qualities. The ingredients and the manufacturing process can be sources of uncleanliness for a product. [4]

Preparation sunscreen cream can originate from compound natural and compound chemistry. Preparation of sunscreen cream from compound experience can be obtained from natural ingredients like plants with activity photoprotection or protection from ultraviolet light. Content compound antioxidants and tyrosinase inhibitors in plants can protect the skin from exposure to excess ultraviolet light. The formulation sunscreen cream contains eight active ingredients and 19 additional ingredients. Material active in the manufacturing process preparation of sunscreen cream benefits certain people who can support the ability to prepare. It gives an effective photoprotection of the skin. *Curcuma heyneana* root extract is known for protecting the skin from sun rays because the content of tannins, flavonoids, and saponins play a role as compound antioxidants. *Cichorium intybus* root *Oligosaccharides* have several mechanisms in give effect photoprotective and guarding healthy skin; they reduce trans-epidermal water loss

(TEWL) so they can moisturize skin, womb the polyphenols as compound antioxidants, and content capable of oligofructose increase amount vitamin D receptors so can prevent emergence cancer[5]. Other plants also have a content compound, such as *Caesalpinia spinosa* gum containing polysaccharides, phenolics, and their derivatives, flavonoids, saponins, and terpenoids.[6] Content flavonoid compounds in *Scutellaria baicalensis* root extract protect skin from exposure to ultraviolet light [7]. The content compound glabridin, which *Glycyrrhiza glabra* root extract owns, acts phenolic as a compound with sufficient antioxidants. Material active with compound other antioxidants used in formulation preparation cream veil sun. This *Zizyphus jujube Fruit Extract* is known to have high flavonoid content[8]. Besides compounds capable of antioxidants that protect the skin from UV radiation, tyrosinase inhibitors are other mechanisms that hinder the stimulating enzyme tyrosinase, preventing melanin formation. When melanin is inhibited in its formation, then the process of skin embezzlement will be hampered. In formulation preparation, cream veil non-aromatic halal solar material actively has the role of a tyrosinase inhibitor, including Glycyrrhiza glabra Root Extract, Zizyphus jujube Fruit Extract, and Shikimic Acid [8] Niacinamide is a material inhibitory active melanin formation with a mechanism that inhibits the transfer of melanosomes from melanocytes to around keratinocytes. Besides that, niacinamide can also control the skin's humidity by reducing TEWL[9]. Thus, the product can utilized as a moisturizer and sunscreen/UV-protective sunscreen.

Based on the description, namely, sunscreen cream, it is still essential for Hajj and Umrah pilgrims to protect their skin from exposure to excessive sunlight in the Saudi Arabian region. However, there is doubt about the use of cosmetics. Hajj pilgrims can use personal care products like sunscreen cream that is halal and non-aromatic and can penetrate the skin. Halal sunscreen cream is developed from active materials or additions that do not contain unclean and other haram materials. The cream formulation does not use additional fragrance additives. The formula developed in this research functions as a moisturizer and protector that the general public and hajj and Umrah pilgrims can use.

Based on the description above, the research aims to know halal materials, yes or no aromatic content, compatibility characteristics, and effectiveness of the SPF value of preparing aromatic halal sunscreen moisturizer cream with method experimental research *design*. Evaluation characteristics physically observed cover organoleptic, homogeneity, power spread, power stickiness, pH, and viscosity.

MATERIAL AND METHOD

Materials

Research materials used in a study fulfill its standard pharmaceutical (*pharmaceutical grade*), which consists of *Curcuma heyneana* root extract, *Cichorium intybus* root *oligosaccharides*, *Caesalpinia spinosa* gum, *Scutellaria baicalensis* root extract, *zizyphus jujube* fruit extract, shikimic acid, niacinamide, octyl methoxycinnamate, potassium palmitoyl hydrolyzed wheat protein, glyceryl stearate, cetyl alcohol, Cetearyl alcohol, polyacrylamide, trimethylene glycol, butylated hydroxytoluene, dimethicone, laureth-7, glycerin, isopropyl palmitate, Cyclopentasiloxane, c13-14 isoparaffin, aluminum starch octenyl succinate, phenoxyethanol, trisodium edta, sodium hydroxide, water.

METHOD

Halal Ingredient Analysis

The diet utilizes ingredients that can cause a halal ingredient to become haram (vegetable ingredients, animal ingredients, microbial products). It is also halal to use during Hajj and Umrah, where if there is Fragrance, This product cannot be used in Ihram ethics. The identification method compares the prepared excipients with the MUI halal positive list.

Table 1. Formulation Preparation Sunscreen Moisturizer Cream

Material	Range Concentration Use (%)	Concentration (%)
Curcuma heyneana Root Extract	-	0,3
Cichorium intybus Root Oligosaccharides	-	1
Caesalpinia spinosa Gum	-	1
Scutellaria baicalensis Root Extract	-	0,1
Glycyrrhiza glabra Root Extract	-	0,1
Zizyphus jujuba Fruit Extract	-	0,1
Shikimic Acid	-	0,3
Niacinamide	-	3
Octyl methoxycinnamate	<10	3
Potassium Palmitoyl Hydrolyzed Wheat Protein	<2	2
Glyceryl Stearate	-	2
Cetyl Alcohol	2-5	3
Cetearyl Alcohol	2-5	3
Polyacrylamide	<2	1
Triethylene Glycol	< 0,08	0,05
Butylated Hydroxytoluene	0.0075–0.1	0,05
Dimethicone	10-30	10
Laureth-7	-	1
Glycerin	≤ 10	3
Isopropyl Palmitate	0,05 – 5,5	1
Cyclopentasiloxane	0,1 – 49	2
C13-14 Isoparaffin	0,001-90	1
Aluminum Starch Octenylsuccinate	2-4	2
Phenoxyethanol	0,5 – 1,0	1
Trisodium EDTA	0,005 – 0,1	0,1
Sodium Hydroxide	<6.9	1
Water	ad 15	ad 15

Homogeneity Test

The homogeneity test was carried out to determine the mixability of the cream preparation. This test is carried out by observing the presence or absence of coarse grains in the preparation as seen through a glass object and felt with the hand.[11]

Spreadability Test

The spreading power test was carried out by placing 0.5 grams of the cream preparation on a scaled round glass plate and then measuring the spreading diameter after being given an additional load of 50 grams, 100 grams, 150 grams, 200 grams, and 250 grams every minute.[12]

Adhesion Test

The adhesion test was carried out by placing 0.5 grams of the preparation on the adhesion test equipment, then covering both glass plates and applying a load of 250 grams for 5 minutes. The calculation of the adhesion test time begins at the same time as the weight is removed from the adhesion test equipment.[13]

pH test

The pH value is tested using universal pH. The universal pH paper is smeared evenly with the cream preparation and then compared with the universal pH indicator. [13]

Viscosity Test

The viscosity test used a Brookfield viscometer with a size 40 spindle and a spindle rotation speed of 30 rpm.[13]

SPF test

A solution of 100 ml chloroform: 100 ml ethanol (1:1) was made. 0.5 grams of sunscreen moisturizer cream is put into a 50

ml measuring flask. A mixed solution of chloroform: methanol (1:1) was added to the calibration limit, homogenized, filtered using a cotton filter, placed in a quartz cuvette, and measured absorbance using a spectrophotometer. The blank is a mixture of chloroform and ethanol (1:1). The SPF value was measured for absorbance in the wavelength range 290-320 nm with 5 nm intervals. Finally, the Mansur method was used for data analysis. This process was carried out in 3 replications.

RESULT

Halal Ingredient Analysis

Sunscreen moisturizer cream preparations are included in the halal positive list checklist issued by the MUI.

Aromatic Content

There is no preparation for sunscreen moisturizer cream that functions as a particular fragrance. This test was carried out organoleptically with a response assessment that no odor remained in the cream preparation after use.

Table 2. Evaluation Results of Physical Characteristics of Halal Non-aromatic Sunscreen Moisturizer Cream Preparations

Testing	Results *		
Organoleptic	Color	Aroma	Texture
	Yellowish White	Not scented	Gentle
Homogeneity	Homogeneous, there are no coarse grains		
Spreadability	6.50 cm ± 0.26		
Adhesion	3.77 seconds ± 0.80		
pH	5.00 ± 0.00		
Viscosity	5.64 cPs ± 0.63		

*Data are expressed as mean ± SD, n = 5

DISCUSSION

Halal Ingredient Analysis

Halal Non-Aromatic sunscreen moisturizer cream preparation, which consists of 8 active ingredients and 19 excipients, is included in the Halal Positive List checklist issued by the MUI.

Aromatic Content

Sunscreen moisturizer cream preparation, no preparation, functions as a fragrance. However, there is a preparation that could be a fragrance sourced from *Pub. Med*, Triethylene Glycol in cosmetics functions as *Fragrance*. However, because the excipient is not used as a *fragrance*, it is the aroma of the original preparation, and the 0.05% trimethylene glycol preparation is used as a viscosity enhancer, not as a fragrance [15]. For this reason, it is permissible to use triethyl glycol because it helps the effectiveness of the preparation and is not used as a perfume or Fragrance. [16]

Evaluation of Physical Characteristics

Organoleptic Test

Organoleptic tests are carried out to determine the physical appearance of preparations made by visual observation, including the preparation's color, aroma, and texture. Five panelists who were pharmacy students at UIN Maulana Malik Ibrahim Malang carried out organoleptic test observations at room temperature.

The results of organoleptic test observations that have been carried out show that this halal, non-aromatic Sunscreen moisturizer cream preparation for Hajj and Umrah pilgrims has a yellowish-white color, is unscented and has a soft texture. The results of this organoleptic test are based on research that found that a good cream preparation has a soft texture consistency and is homogeneous or has the same color. In this cream preparation, no aroma or Fragrance appears [10]. This is the main aim of making non-aromatic halal sunscreen moisturizer

cream preparations for Hajj and Umrah pilgrims, avoiding preparations with a particular aroma or Fragrance. Hence, they are safe to use during the Hajj and Umrah pilgrimages.

Homogeneity Test

The homogeneity test is a series of tests to determine the results of mixing the ingredients that make up the cream. Data from observations of cream homogeneity carried out by the panelists showed that the five had the same opinion that the halal non-aromatic *unscreen moisturizer cream preparation* for Hajj and Umrah pilgrims had good homogeneity. The panelists also agreed that the cream samples showed no visible coarse grains. Coarse grains in a cream preparation indicate the presence of lumps of material, so these grains can be a sign that the mixing is not perfect. The observation results show that this cream preparation does not have coarse grains, so it can be concluded that the constituent ingredients are mixed perfectly.

Spreadability Test

The spreadability test is an observation to determine the spreadability of a cream preparation when applied to the skin. The observation results show that the average ± SD value of the spreadability of the preparation is 6.50 cm ± 0.26 with no different replications. The spreadability test results obtained from the non-aromatic halal Sunscreen moisturizer cream preparation for Hajj and Umrah pilgrims are within the expected spreadability range for good topical preparation, namely 5-7 cm.[12]

Adhesion Test

The adhesion test is a test of topical preparations carried out to determine the ability of cream preparations to stick to human skin so that they can function optimally. Based on the results of observations of the adhesion test with three replications, it is known that the average ± SD time required for the two glass object plates to separate in the adhesion test is 3.77 seconds ± 0.80. These results are to the requirements for cream preparations, which state that the expected interpretation of adhesive strength test results from a good cream preparation is more than one second.

Test pH

The pH test is one of the crucial tests carried out for topical preparations because this test is closely related to the irritation effects that may appear when the preparation is applied to the skin. Based on testing the pH value of the preparation carried out, it was found that the mean value ± SD of the three replications is 5.00 ± 0.00. The results of the pH value obtained from the sunscreen moisturizer cream preparation This non-aromatic halal meets the pH requirements of a good cream preparation because it is by the skin's pH (4.5 – 6.5), does not cause dryness and does not irritate because it is still in the range between 4.5 – 8 (Indonesian National Standard, 1996).

Viscosity Test

The viscosity test is a test that aims to assess the viscosity of a preparation. The viscosity test results on the *Sunscreen moisturizer cream preparation* showed a value far below the range of requirements for good preparation in the three replications, namely 2,000-50,000 cPs. This happens because the spindle used is too large. The spindle number commonly used to measure cream viscosity is 6 or 7.

Determination of SPF Value

Sunscreen, moisturizer cream formula, and Halal Aromatic are obtained. The SPF value is 38.332 ± 1.526, meaning that the SPF value in this formula, according to the FDA, can provide ultra protection against UV rays from the sun, which can provide free radicals.

This research concludes that the excipients used to prepare halal, non-aromatic sunscreen moisturizer cream products are included in the MUI's halal positive list. Evaluation of the physical characteristics of the sunscreen moisturizer cream preparation has met the requirements for the quality of a good cream preparation, except for the viscosity test, due to the

limitations of the equipment used. Promising results with a Sun Protecting Value Factor (SPF) of 38.332 ± 1.526. Thus, the sunscreen moisturizer cream product is halal and non-aromatic and can be used by the congregation to implement the Hajj and Umroh, especially in ihram.

CONCLUSION

This research concludes that the excipients used to prepare halal, non-aromatic sunscreen moisturizer cream products are included in the MUI's halal positive list. Evaluation of the physical characteristics of moisturizing and protective cream preparations has met the requirements for the quality of good cream preparations, except for the viscosity test, due to limitations in the equipment used. Sun Protecting Factor (SPF) value of 38.332 ± 1.526. Thus, the non-aromatic halal Sunscreen moisturizer cream product can be used by pilgrims during the Hajj and Umrah pilgrimages, especially during ihram.

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CONFLICT OF INTERESTS

The authors declared no conflict of interest**.**

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