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Effect of Different Concentrations of Propylene Glycol and Glycerin on the Formulation of Guava Leaf (Psidium Guajava Linn.) Body Scrub with White Rice (Oryza sativa Linn.)

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ABSTRACT

Guava leaves (Psidium guajava Linn.) have contents such as saponins, essential oils, tannins and anti-mutagenic and antioxidants which are ingredients that can reduce free radicals to cells. The use of propyllenglikol and glycerin as humectants in cream needs to be optimized considering the differences in the physical and chemical properties of the two humectants that can affect the physical properties of the cream produced. This research method is an experimental observation research. This study aims to determine the ethanol extract of guava leaves with white rice can be formulated and the effect of glycerine-propylenglycol in body scrub cream preparations with each concentration of 1%, 3%, and 5% and vice versa 5%, 3%, and 1% made in 3 formulas. The results obtained from the evaluation of the preparation are: Organoleptical test FI (green), FII and FIII (brown). Homogeneity test obtained by the three formulas is homogeneous, pH test obtained that all formulas meet the pH requirements of 4.5 - 6.5. The spreadability test obtained results inFI (3.1 cm), FII (3.2 cm), FIII (3.0 cm). As for the determination ofthe type (type) of emulsion obtained that all formulas have type m/a. Therefore, from these results, it can be concluded that the best formula is formula I in accordance with the criteria and standards in the evaluation of preparations have type m/a.

1. INTRODUCTION

Guava leaves contain ingredients such as saponins, essential oils, tannins and are anti-mutagenic and antioxidants which are ingredients that can reduce free radicals against cells. so it can be used for various cosmetic and other purposes[1]. The presence of propylene glycol and glycerin as humectants in bodyscrub cream formulas has a fairly large percentage of 5-20% [31], the large percentage of these humectants in the formula can have a considerable influence on the physical properties of bodyscrub cream. White rice besides being easy to find, also has arelatively cheap price, compared to brown or other rice. White rice has phenolic compounds such asflavonoids as antioxidants and prevent skin damage. Specifically, the content of rice that is beneficialfor the skin, namely the content of tocols (tocopherols and tocotrienols), gamma-oryzanol and ceramide, namely pure natural vitamin E, vitamin E has been widely recognized as an antioxidant which is good for skin health[2].

The use of propylene glycol and glycerin composition as humectants in cream needs to be optimized considering the differences in the physical and chemical properties of the two humectants that can affect the physical properties of the cream produced. Humectants are moisture retaining ingredients which are often added to cream preparations (body scrubs) which function to maintain moisture and cream stability while in packaging or in application/use to the skin [3] In general, the skin is the outermost part of the body and is in direct contact with the environment. Therefore, before the skin becomes dull, withered and wrinkled, bodycare can be done to protect and maintain healthy skin through internal and external treatments. One ofthe external treatments is using a body scrub [4]. Luluran (scrubing) is an activity to remove dirt, oil or dead skin cells

which is done with a full body massage and the results can immediately look like smoother, tighter, fragrant, and healthy glowing skin.

Bodyscrub cream preparation formulation fromethanol extract of guava leaves (Psidium Guajava Linn.) with white rice (Oryza Sativa Linn.) using propylene glycol with various concentrations of 1%, 3% and 5% and glycerin with various concentrations of 5%, 3% and 1%. where the benefits of guava leaves (Psidium Guajava Linn.) with white rice (Oryza Sativa Linn.) for skin care are not widely known by the public and the use of body scrub creams is easier to use and can be applied directly to the skin. In previous studies, research has also been conducted on the Formulation of Scrub Cream Preparations (body scrub) from Black Glutinous Rice Extract (Oryza sativa L.Var glutinosa) as a Natural Skin Moisturizer, from the study also obtained the influence of humectants on the evaluation carried out. Formulation of body scrub cream from ethanol extract of guava leaves (Psidium Guajava Linn.) and white rice (Oryza Sativa Linn.) was carried out by organoleptic test, homogeneity test, pH test, spreadability test, and stability test[5].

2. METHODS

The research method was carried out using a research method that is experimental observation. With the aim of knowing whether guava leaves and white rice can be formulated into body scrub preparations. The tools used in this study were: glassware, stirring rod, porcelain cup, parchment paper, mortar and pestle, analytical balance (Boeco Germany), pH meter (Hanna). While the materials used in this study were: guava leaves, ethanol, white rice, distilled water (aquadest), stearic acid, cetyl alcohol, propylene glycol, triethanolamine (TEA), methyl paraben, buffer solution, acidic pH, buffer solution. neutral pH. The technique used for sampling guava leaves and white rice was purposive sampling, ie without comparing one regional plant to another.

The dispersion test aims to determine the amount of dispersion produced by the preparation. Dispersion testing is carried out by means of cream preparations weighed first as much as 0.5 grams, after which the gel is placed right under the glass below accompanied by a diameter scale and then covered by another glass. After that, a load weighing 50 grams is added and left for 1 minute, then the diameter of the spread is measured. The same thing is done every 1 minute in the next formula. The results obtained from the evaluation of the preparation are: Organoleptis Test FI (green), FII and FIII (brown). The homogeneity test can be obtained by all three homogeneous formulas, the pH test obtained that all formulas meet the pH requirements of 4.5 – 6.5. The dispersion test can be obtained results on FI (3.1 cm), FII (3.2 cm), FIII (3.0 cm). As for determining the type (type) of emulsion, it is obtained that all formulas have type m / a. Formula I shows the highest dispersion of 3.1cm; formula II shows a dispersion of 3.2cm ; and fomula III shows a dispersion of 3cm.

3. RESULTS AND DISCUSSION

The body scrub preparation of ethanol extract of guava leaves includes observations on the organoleptic test, homogeneity test, spreadability test, pH test, and determination of the emulsion type of the preparation.

Table 1.Organoleptic Examination of Bodyscrub Cream Preparations.

Testing	Formulas		
	F1	F2	F3
Form	It's kinda thick	Half solid	Half solid
Color	Green	Chocolate	Chocolate
Smell	Typical leaf odor guava	Typical leaf odor guava	Typical smell of guava leaves seed

Table 2. Homogeneity Examination of Bodyscrub Cream Preparations

Formulas	Information
F1	Homogeneous
F2	Homogeneous
F3	Homogeneous

Table 3. Checking the pH of Bodyscrub Cream Preparations

Formulas	Remarks (pH)
F1	6,4
F2	6,2
F3	6,3

Table 4. Examination of Spreadability Test of Bodyscrub Cream Preparations

Formulas	Information
F1	3.1cm
F2	3.2cm
F3	3.0cm

Table 5. Determination of Bodyscrub Cream Emulsion Type

Formulas	Information
F1	m/a
F2	m/a
F3	m/a

The body scrub preparation of ethanol extract of guava leaves includes observations on the organoleptic test, homogeneity test, spreadability test, pH test, and determination of the emulsion type of the preparation.[6]. Organoleptic tests are shown to obtain body scrub preparations that have attractive colors, odors that can be accepted by the user, and a form that is comfortable to use, considering that this preparation is a body scrub preparation so that the aesthetic value of the body scrub preparation must be properly considered. The results of organoleptic observations of the preparation had a different color for each formula[7]. FI is green, FII is brown, and FIII is brown, this is influenced by the amount of material added. All preparations have a characteristic odor and Formulas I, II, and III have a good consistency, and are in a semi-solid form. Whereas in the study of Rasidah Wahyni Sari and Rini Anggraeny FI was pale yellow, FII was yellow, FIII was greenish yellow[1]

From the results of the homogeneity test of the guava leaf ethanol extract body scrub cream that has been carried out, the results were obtained in Formulas I, II, III, and it was stated that all preparations did not obtain coarse grains and lumps on the slide, so all body scrub cream preparations were declared homogeneous[8]. Whereas in Sep Fani Triana Putri's research Formula I was homogeneous, Formula II was homogeneous, Formula III was homogeneous. Then all preparations are declared homogeneous[9]

The pH test was carried out by using a pH meter. The tool was first calibrated using a standard buffer (pH 4 and pH 7).[10] The results obtained in the pH examination showed that the formulation with Formula I had a pH of 6.4; for Formula II it has a pH of 6.2; and for Formula III it has a pH of 6.3 . The pH value of each concentration still meets the pH requirements for topical preparations, namely 4.5 – 6.5. Meanwhile, in Novi Pramuditha's research, pH FI was 6.9; FII 6.8 ; FIII 6.7 of the three formulas have met the requirements, namely 4.5-6.5[11]. The spreading power test aims to determine the amount of spreading power produced by the preparation. The spreadability test was carried out by first weighing 0.5 gram of the cream preparation, after that the gel was placed right under the glass below which was accompanied by a diameter scale and then covered with another glass. After that, a load weighing 50 grams was added and left for 1 minute, then the diameter of the spread was measured[12]The same thing is done every 1 minute in the next formula. Formula I shows the highest spreadability of 3.1cm; formula II shows a spreadability of 3.2cm; and formula III showed a spreadability of 3 cm. Whereas in Sep Fani Triana Putri's research formula I was 2.7 cm; Formula II 2.2 cm ; Formula III 2.4 cm from the results of this study it can be stated that all formulas do not meet the requirements for the spreadability test[7]

This method aims to determine the preparation. If the preparation is completely mixed then it is type o/a while the preparation is not completely mixed then it is o/m. This test is carried out by inserting 0.1 gram of cream into a test tube by adding 10 ml of distilled water[13]In formula I the preparation was not completely mixed so that it was m/a, formula II was not completely mixed so that it was m/a, formula

III was not completely mixed so it was m/a. Whereas in Khoirun Nisa's research, Formula I m/a, Formula II m/a, Formula III m/a. In this formula, the oil-in-water emulsion type has the advantage of being easier to spread on the surface of the skin, non-sticky and easily washed off with water[14] [15].

4. CONCLUSION

The conclusion obtained from the results of the study is that the III formula can be influenced by propilenglikol and glycerin from the evaluation carried out, and the best formula is formula I Because from the results of the pH evaluation formula 1 pH is close to neutral pH and the dispersion of formula I is more diffuse. And in formula I glycerin has a higher concentration of 5%, so the higher the concentration used, the better the preparation obtained. The results of the effect of differences in propylene glycol and glycerin on the preparations showed that: a) The organoleptic testdid not show differences in dosage forms, F1 semi-solid preparations, F2 semi-solid preparations, F3semi-solid preparations. b) The spreadability test of FI, F2, and F3 showed different spreadability foreach preparation. c) The pH test of the resulting F1, F2, and F3 is 6.2 – 6.4.

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