

Formulation of Wangi Pandan Leaves (*Pandanus Amaryllifolius Roxb*) to smooth, moisturize and repair the skin

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ABSTRACT

Bodyscrub is one of the products that is the result of rapid technological developments today, bodyscrub scrubs are used to maintain the cleanliness and freshness of body skin, bodyscrub products vary greatly starting from price, packaging color, softness of texture and aroma (Nina Hairiyah, Nuryati, and Fitri Nordiyah, 2022). The aim of using a body scrub is to remove dead skin cells, dirt and open pores so that the skin becomes brighter and whiter. Currently, there are many types of body scrubs circulating in society with various benefits ranging from smoothing the skin to whitening the skin (Hairiyah, N., & Nuryati, 2020) Medicinal plants have traditionally been used to treat many diseases and maintain health in Southeast Asia, many plants are described as having traditional medicinal properties. One of the plants that can be used in cosmetics is fragrant pandan leaves (*pandanus amaryllifolius roxb*) which is a tropical plant from the *pandanaceae* family. Pandan leaves can also be called pine leaves. because it resembles a pineapple with long, spiral green leaves. narrow and rope-shaped. Pandan leaves contain phytochemical compounds such as steroids, carbohydrates, phenols, flavones, alkaloids, glycosides, amino acids and many vitamins. The appearance and function of the skin is maintained by an important balance between water.

This study aims to formulate and evaluate the physical quality results of pandan wangi leaves powder body scrub cream with emulgator concentrations of 15%, 14% and 13% stearic acid, and 1%, 2% and 3% triethanolamine. Experimental research method to determine variations in the concentration of stearic acid and triethanolamine emulsifiers. Observation of the results of evaluating the physical quality of the preparation includes organoleptic tests, homogeneity, pH, stickiness tests, spreadability tests and emulsion type. The result It can be concluded that the fragrant pandan leaf powder body scrub preparation can moisturize the skin, shows a homogeneous scrub with a semi-solid shape, is light green in color and has a typical pandan smell, has a neutral pH of 7.4 and 7.2 on day 7, the pH value is not appropriate The desired number is 6, this is because the preparation is influenced by the number of emulsifiers used. The more stearic acid, the lower the pH because of the large number of acid groups contained in stearic acid, while the more triethanolamine will cause the pH to be high due to the presence of basic groups contained in triethanolamine. with a spreadability of 5.1 cm and 4.83 cm on day 7. This is because the emulsifier concentration is high and the surfactant concentration is low, so the viscosity is very high so the spreadability is low. and the results of adhesion were 88.33 seconds and 49.33 seconds on day 7, adhesion was influenced by the viscosity of the base. Stickiness is closely related to viscosity.

Keywords : medicinal plant, pandan wangi leaves, physical test

INTRODUCTION

Medicinal plants have traditionally been used to treat many diseases and maintain health in Southeast Asia, many plants are described as having traditional medicinal properties. One of the plants that can be used in cosmetics is fragrant pandan leaves (*pandanus amaryllifolius roxb*) which is a tropical plant from the *pandanaceae* family. Pandan leaves can also be called pine leaves. because it resembles a pineapple with long, spiral green leaves. narrow and rope-shaped. Pandan leaves contain phytochemical compounds such as steroids, carbohydrates, phenols, flavones, alkaloids, glycosides,

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Content of stratum comeum and skin surface lipids, exposure. External factors and endogenous factors can disrupt this balance. Apart from that, the frequent use of soap, detergent and topical irritants that are not suitable for the conditions that most often occurs is loss of water content which causes dry skin such as rough, scaly and cracked skin. Topical treatments are needed to maintain skin moisture and health. one example of skin care cosmetics is a scrub (Leny, L., et all, 2022).

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The aim of using a body scrub is to remove dead skin cells, dirt and open pores so that the skin becomes brighter and whiter. Currently, there are many types of body scrubs circulating in society with various benefits ranging from smoothing the skin to whitening the skin (Hairiyah, N., & Nuryati, 2020)

Rubbing or scrubbing can produce dead skin cells, allowing the skin to absorb moisturizer better, thus moisturizing the skin, making the skin brighter and feeling soft. Just like skin cells on the face, skin cells on the body are also routinely replaced with new, healthy cells under the skin. The regeneration process of these cells will slow down as we age. Rice, which is a source of carbohydrates which is a source of energy, can be beneficial for the skin. Rice can help moisturize and can increase skin collagen production which can help increase skin elasticity so that skin looks brighter and looks easier. The chemical structure in rice can help regenerate damaged or dead skin cells.

Fragrant pandan leaves Wangi pandan (*Pandanus ammaryllifolius*) or simply pandan is a type of monocotyledonous plant from the Pandanaceae family. The leaves are an important component in Indonesian cooking traditions in other southeast Asian countries. Pandan wangi is a shrub, about 1-2 m high. This plant is easy to find in yards or grows wild on the shady edges of ditches. The stem is branched, spreading, at the base a supporting root emerges. Fragrant pandan leaves are green, with small spines at the tip of the leaves, if you squeeze the leaves they smell fragrant.

Single leaf with the base hugging the stem, arranged 8 in a row of three in a spiral line. Tipios leaf blade, smooth, pointed tip, flat edge, parallel bones. 40-80 cm long, 3-5 cm wide and has thorns attached to the lower surface of the leaf spine at the tips. Some varieties have toothed leaf edges.

White glutinous rice (*Oryza sativa glutinosa*) is a rice variety belonging to the Graminae family. Rice grains mostly consist of around 80-85% starch which is found in the endosperm which is composed of starch granules measuring 3-10 millimicrons (Nina Hairiyah, Nuryati, and Fitri Nordiyah, 2022).

METHODS

Place cetyl alcohol and stearic acid in a porcelain cup, then melt and keep the temperature constant (mixture A). Dissolve Methyl paraben in Propylene glycol (Mixture B), Add triethanolamine, sorbitol and Mixture B to the water (Mixture C), Heat mixture C to 80oC, Mix mixture A with mixture C in a heated mortar Stir quickly and constantly for 10 minutes then stir at medium speed until cool, add essential oil to the base mixture, Add fragrant pandan leaf powder and grind until homogeneous

RESULTS

Evaluation test	Day 1	Day 7
Organoleptic	Color: greenish white	Color: Greenish white
	Smell: typical pandan	Smell: typical pandan
	Shape: semi-obtainable	Shape: semi-obtainable

pH tes	7,4	7,2
Spreadability test	Without load: 4.50 cm	Without load: 4.55 cm
	With load: 5.1 cm	With load: 4.87 cm
Adhesion test	88,33 second	49, 33 second
Stability test	Stable	Stable
Hedonic test	like	like
Homogeneity test	homogeneous	homogeneous

DISCUSSION

The scrub cream preparation is made by adding fragrant pandan leaf powder as a nourishing substance to moisturize the skin. The fragrant pandan leaf powder used is 3 grams. The organoleptic results showed that the scrub cream was semi-solid, light green in color and had a distinctive pandan smell. The homogeneity test showed that the fragrant pandan leaf powder scrub cream preparation had good homogeneity. homogeneity test to ensure the active substances contained therein are evenly distributed.

pH testing was carried out using a pH meter, the pH value of the body scrub on day 1 showed a value of 7.4, while storage for 7 days showed a value of 7.2. pH values of 7.4 and 7.2 are neutral. This value is included in the standards required for the pH of cosmetic skin products by SNI 16-4399-1996 as a quality requirement for skin moisturizers, ranging from 4.5-8.0 (Hairiyah, N 2022), meaning that the pH of the bodyscrub has a neutral pH value and is safe for the skin. .

According to Musdalipah, M 2016, a pH test was carried out to determine whether the cream produced was acidic and alkaline based on the pH value obtained. A pH that is too acidic or alkaline will cause irritation to the skin, so it is necessary to match the cream preparation with the skin's pH. The skin is a layer that covers the surface of the body and has the main function of the skin as protection from various kinds of disturbances and external stimuli with a pH range in cream preparations of 4.5-6.5. pH measurements are also to ensure the stability of stearic acid and triethanolamine as emulsifiers. The cream preparation is declared safe if it is in the epidermis layer of the skin with a pH of 5-8, so it can be said that the fragrant pandan leaf powder bodyscrub preparation is safe to use. The pH value is not as desired, namely 6, this is because the preparation is influenced by the amount of emulsifier used. The more stearic acid, the lower the pH because of the large number of acid groups contained in stearic acid, while the more triethanolamine will cause the pH to be high due to the presence of basic groups contained in triethanolamine.

The spreadability test is carried out to see how the scrub cream preparation spreads when applied to the skin. The results of measuring the spreadability of the scrub cream preparation are that it has good spreadability when applied to the skin and meets the requirements for the spreadability value of topical preparations, namely 5-7 cm (Leny, L 2022). The results obtained on day 1 of the scrub cream preparation were 5.1 cm and on storage for 7 days the results were 4.83 cm, so the spreadability results on day 1 met the requirements while the evaluation on day 7 showed the preparation was unstable.

This is because the emulsifier concentration is high and the surfactant concentration is low, the viscosity is very high so the spreadability is low. Spreadability is influenced by the dosage form, which has an inverse relationship with viscosity or dosage form. The spreadability of semisolids is divided into 2, namely semistiff and semifluid. semistiff is a semisolid preparation that has a high viscosity while semifluid is a semisolid preparation with a low viscosity. For semistiff, the spreadability requirement set is 3-5 cm² and for semifluid it is 5-7 cm². (Priawanto, P. G. 2017).

The adhesion test on the scrub cream preparation on day 1 showed a result of 88.33 seconds and on the stability test on day 7 it showed a result of 49.33 seconds, this shows that the scrub cream

preparation met the requirements. The requirement for testing adhesion to topical preparations is no less than 4 seconds. (Badia, E 2022).

In adhesion testing, our formulation has a long adhesion time, this is because the longer it takes for the two slides to separate, the higher the adhesion, so the longer the preparation sticks to the skin and the longer the effect of the active substance. Adhesion power is influenced by the viscosity of the base. Stickiness is closely related to viscosity. The higher viscosity is caused by the higher consistency of the preparation so that the adhesion time is longer. (Priawanto, P. G. 2017). The difference in stickiness is influenced by ingredients such as stearic acid which makes the cream stiffer. (Tari, M., & Indriani, O. 2023).

Based on stability testing, there were no significant changes, indicating that the results of the scrub cream preparation were less stable. However, it should be noted that all tests were carried out at room temperature. The room temperature itself is not certain, namely in the range of 25-30°C. The lower the room temperature causes the particle density to increase, as a result the dispersion power decreases. Widyaningrum, N., et al (2012)

CONCLUSION

It can be concluded that the fragrant pandan leaf powder body scrub preparation can moisturize the skin, shows a homogeneous scrub with a semi-solid shape, is light green in color and has a typical pandan smell, has a neutral pH of 7.4 and 7.2 on day 7, the pH value is not appropriate The desired number is 6, this is because the preparation is influenced by the number of emulsifiers used. The more stearic acid, the lower the pH because of the large number of acid groups contained in stearic acid, while the more triethanolamine will cause the pH to be high due to the presence of basic groups contained in triethanolamine. with a spreadability of 5.1 cm and 4.83 cm on day 7. This is because the emulsifier concentration is high and the surfactant concentration is low, so the viscosity is very high so the spreadability is low. and the results of adhesion were 88.33 seconds and 49.33 seconds on day 7, adhesion was influenced by the viscosity of the base. Stickiness is closely related to viscosity. The higher viscosity is caused by the higher consistency of the preparation so that the adhesion time is longer. The difference in adhesion power is influenced by ingredients such as stearic acid which makes the cream stiffer. Based on stability testing, there were no significant changes, indicating that the results of the scrub cream preparation were less stable.

REFERENCE

- Badia, E., Yodha, A. W. M., Musdalipah, M., Nohong, N., & Sahidin, I. (2022). Formulasi Sediaan Salep Ekstrak Batang Meistera Chinensis. *Warta Farmasi*, 11(2), 19-28.
- Hairiyah, N., & Nuryati. (2020). Aplikasi Beras Ketan Hitam (*Oryza Sativa* Var Glutinous) Dan Madu Sebagai Bahan Dasar Pembuatan Bodyscrub. *Jurnal Teknologi Pertanian*, 24, 115–121.
- Leny, L., Diana, V. E., Ginting, M., Iskandar, B., & Fadhila, C. (2022). The Effectiveness of Pandan Wangi Leaves (*Pandanus Amaryllifolius* Roxb.) Body Scrub Formulation in Smoothing the Skin. *Asian Journal of Pharmaceutical Research and Development*, 10(1), 1-5.
- Musdalipah, M. (2016). Formulasi Body Scrub Sari Ubi Jalar Ungu (*Ipomoea batatas* L.) Varietas ayamurasaki. *Warta farmasi*, 5(2), 1-12.
- Nina Hairiyah, Nuryati, dan Fitri Nordiyah. (2022). FORMULASI PEMBUATAN BODYSCRUB BERBAHAN DASAR BERAS KETAN PUTIH (*Oryza sativa* var glutinous) DAN MADU. *Jurusan Teknologi Industri Pertanian, Politeknik Negeri Tanah Laut*, 26.
- Priawanto, P. G. (2017). Formulasi dan Uji Kualitas Fisik Sediaan Gel Getah Jarak (*Jatropha Curcas*) Disusun Untuk Memenuhi Salah Satu Syarat Memperoleh Derajat Sarjana Farmasi Pada Fakultas Kedokteran Dan Ilmu Kesehatan Universitas Muhammadiyah Yogyakarta (Doctoral dissertation, UNIVERSITAS MUHAMMADIYAH YOGYAKARTA).

- Suriani. (2015). Analisis Proksimat Pada Beras Ketan Varietas Putih (Oryza Sativa Glutinosa). *Al Kimia* 92-102.
- Tari, M., & Indriani, O. (2023). FORMULASI DAN UJI STABILITAS FISIK SEDIAAN KRIM EKSTRAK SEMBUNG RAMBAT (Mikania micrantha Kunth). *Babul Ilmi Jurnal Ilmiah Multi Science Kesehatan*, 15(1).
- Widyaningrum, N., Murrukmihadi, M., & Ekawati, S. K. (2012). Pengaruh konsentrasi ekstrak etanolik Daun Teh Hijau (Camellia Sinesis L.) dalam sediaan krim terhadap sifat fisik dan aktivitas antibakteri. *Sains Medika: Jurnal Kedokteran dan Kesehatan*, 4(2), 147-156.