

Formulation and Antioxidant Activity of Pegagan Yogurt Scrub

Fenti Fatmawati¹, Ira Adiyati Rum¹, Hana Aprilianti¹

1 Faculty of Pharmacy, Bhakti Kencana University, Indonesia

Corresponding Author: Fenti Fatmawati

Submitted: 05-06-2022

Revised: 18-06-2022

Accepted: 27-06-2022

ABSTRACT: A scrub preparation has been made with a combination of the active ingredients of Pegagan and yogurt which has antioxidant activity. Evaluation of the preparations for each formula made at weeks 1 to 3. Antioxidant testing was carried out using the DPPH method. The best combination between Pegagan and yogurt is 3:9. From this experiments, it can be concluded that yogurt has a higher role than Pegagan for its antioxidant activity.

KEYWORDS: Antioxidant, Formulation, Pegagan, Yogurt.

I. INTRODUCTION

^[1]Traditional scrub is one of the cosmetic preparations made from natural plants or fruit. Scrub has a variety of benefits depending on the basic ingredients it contains. Here are some benefits that can be obtained from using scrubs. The skin is an organ that covers the entire human body and has the function to protect it from outside influences. In general, the skin undergoes cell regeneration in accordance with the normal cycle of growth of the epidermis from the shot layer to the horn layer occurs within 21 to 28 days. ^[2]Dead skin cells that accumulate from the regeneration results if not scraped off will make the body's skin look dull and rough, so it is necessary to take care of the skin to make it smooth and clean again.

^[3]Scrubbing is an activity to remove dirt, oil or dead skin by massaging the body. Other benefits that can be obtained from scrubbing are tightening the skin, eliminating skin diseases, eliminating body odor.

^[4]Pegagan (*Centella asiatica*) belongs to the order Apiales. Pegagan is widely used in pharmaceutical and non-pharmaceutical preparations. There are several active compounds contained in Pegagan where each of these active compounds has various activities such as antibacterial, antidiabetic, anti-inflammatory, and antioxidant.

^[5]Pegagan contains polyphenols, flavonoids, carotenes, tannins, vitamin C, and triterpenoids which act as antioxidants.

^[6]As a source of probiotics, yogurt has antioxidant activity. Yogurt is useful in overcoming gastrointestinal disorders and preventing cancer. Yogurt is a good source of vitamins and minerals for the body.

The use of natural antioxidants in food, cosmetic and therapeutic industries has been widely used because people have begun to realize the efficacy of antioxidants. Many studies aim to learn more about the antioxidant potential of vegetables, fruits, and grains. One of the ingredients that can be used as a source of antioxidants is Pegagan (*Centella asiatica*) and yogurt. In this study, the antioxidant determination was carried out in the combination scrub formulation of Pegagan and yogurt.

II. EXPERIMENTATION

Sample preparation

^[7]The process begins with the collection of Pegagan and then sorting to separate Pegagan from other plants that are carried away during the process of taking. Pegagan and then washing and drying in an oven at 50° C for five days to dry.

Extraction

Pegagan simplisia was mashed with a blender and sieved using a 60 mesh and then macerated with 70% ethanol with a ratio of 1:10 (w/v) for 36 hours. The macerated extract was filtered and concentrated with a rotary evaporator.

Yogurt

Milk was fermented by adding a starter and incubated at 32°C for 24 hours at 32°C.

The Scrub Process

Stearic acid, Dmdm hydantoin, and glycerin as the oil phase were melted at 70°C using a water bath while stirring. Added glycerin and triethanolamine while continuing to stir. An emulsion was made by incorporating the oil phase preparation into the

water phase little by a little while stirring. Yogurt and Pegagan extract are added while stirring.

Preparation Evaluation

a. pH test

The pH of each formula was tested using a pH meter for 3 weeks

b. Spreadability Test

^[8]Transparent glass is placed on a millimeter block of paper. On the glass is placed 0.5 g of cream, then covered with another transparent glass and left for 1 minute to get some of the diameters of the spread that is formed. Then it was continued by adding a load on the transparent glass with a load of 50, 100, and 150 g and observing the diameter of the spread formed. The specification of the preparation is that the cream can be spread easily and evenly.

c. Homogeneity test

^[9]The scrub that has been made is applied to the slide and covered with another slide and then observed for lumps or granules. Good preparation is homogeneously dispersed without any granules or lumps (Budi and Rahmawati, 2020).

d. Antioxidant Activity Test

^[10]Antioxidant testing was carried out using the DPPH method.

III. RESULTS AND DISCUSSION

Body scrub from Pegagan (Centella Asiatica) and yogurt extracts, can be seen in Figure 1. The scrub preparation was chosen because the body scrub is easier to remove dead skin and exfoliate, the oil fraction is stearic acid and glycerin while the water fraction is aquadest, glycerin, propylene glycol, and triethanolamine (TEA). Stearic acid and glycerin are solid oil fractions that function as cream preparations as emulsifiers. Propylene glycol and glycerin are water fractions that function as humectants, while triethanolamine (TEA) is used as an emulsifier. Surfactants function as pH stabilizers in cosmetic products. Meanwhile, polyethylene is used as a scrub to make it easier to remove dead skin cells. The purpose of making body scrub products is to help remove dead skin cells that are not removed by soap with the aim of improving the appearance of the skin so that the skin becomes cleaner and healthier. The scrub formulation can be seen in table 1.

Table 1. Formulation

Ingredient	Formulation1	Formulation2	Formulation3	Formulation4	Formulation5	Formulation 6
Pegagan extract	9	3	6	12	0	0
Yogurt	3	9	6	0	12	0
Glycerin	0,9	0,9	0,9	0,9	0,9	0,9
Propylene glycol	3	3	3	3	3	3
Dmdm Hydantoin	0,02	0,02	0,02	0,2	0,02	0,2
Stearic acid	3,6	3,6	3,6	3,6	3,6	3,6
Triethanol amine	0,6	0,6	0,6	0,6	0,6	0,6
Polyethylene	3	3	3	3	3	3
Aquadest						



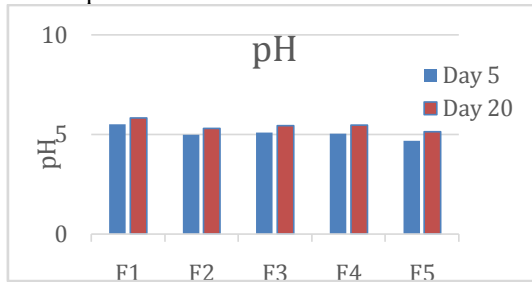
Figure 1

From left to right F1, F2, F3, F4 and F5

Preparation Evaluation

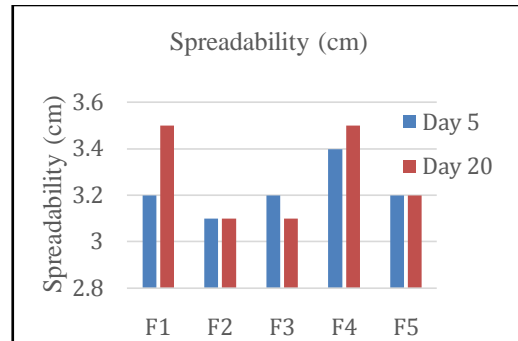
a. pH test

The pH of each formula was tested using a pH meter for 3 weeks. The pH in all formulations is in accordance with the desired criteria, in accordance with the pH of the skin.



b. Spreadability Test

The specification of the preparation is that the cream can be spread easily and evenly. The spreadability of each formula was tested for 3 weeks.



c. Homogeneity test

The scrub that has been made is applied to the slide and covered with another slide and then observed for lumps or granules. Good preparation is homogeneously dispersed without any granules or lumps (Budi and Rahmawati, 2020). The homogeneity of each formula was tested for 3 weeks.

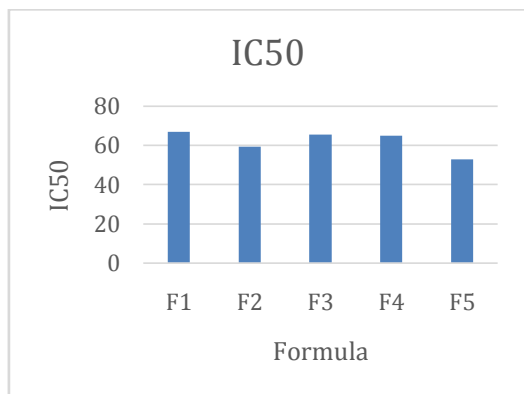
Formulation	Homogeneity
F1	homogeneous
F2	homogeneous
F3	homogeneous
F4	homogeneous
F5	homogeneous

d. Antioxidant Activity Test

Antioxidant testing was carried out using the DPPH method.

Formula	F1	F2	F3	F4	F5
IC ₅₀	67.17	59.5	65.74	65.11	53.04

The best combination between Pegagan and yogurt is 3:9 (F2). From this experiments, it can be concluded that yogurt has a higher role than Pegagan for its antioxidant activity.



IV. CONCLUSION

From antioxidant determination on all formulas, it was found that the best value for an antioxidant activity for the combination of Pegagan and yogurt was formula 2 with a ratio of 3:9. From formulas 4 and 5, it can be concluded that yogurt has a higher role than Pegagan for its antioxidant activity.

REFERENCES

[1]. Rahmadevi, R., Arin, F., Puspita, O., Firda, A. & Yasnawati, Y. Lulur Gosok

Tradisional BERSERI (Beras, Serai Wangi, Kunyit) sebagai Antioksidan. J. Abdimas Kesehatan, 2, 190 (2020).

[2]. Kusuma, I. M., Aunillah, S. & Djuhariah, Y. S. Formulasi Krim Lulur Scrub dari Ekstrak Etanol Ubi Jalar Ungu (Ipomoea batatas (L.) Lam.) dan Serbuk Beras Putih (Oryza sativa L.). J. Farm. Udayana, 10, 177 (2021).

[3]. No. ف. م. غ. ش. 1، ف. ت. 1، ع. ب. م. ن. 2، .تان-برک یب فرصم ریثات نییعت Title سدیم پر عملکرد بی هوای مردان غیر ورزشکار.

[4]. Fatmawati, F., Meliana, E., Tambunan, B. R. & Isonijaya, M. Review : Pegagan (Centella asiatica L) as a Potential Wound Healing Preparation. 17, 48–55 (2022).

[5]. Ayumareta, C. Efektivitas Pegagan Sebagai Antioksidan. 3, 48–59 (2018).

[6]. Samichah. Organoleptik Yoghurt Sari Wortel (Daucus Carrota L). (2014).

[7]. Trisna Rahayu, N. K., Mayun Permana, I. D. G. & Diah Puspawati, G. K. PENGARUH WAKTU MASERASI TERHADAP AKTIVITAS ANTIOKSIDAN EKSTRAK DAUN PEGAGAN (Centella asiatica (L.) Urban). J. Ilmu dan Teknol. Pangan, 9, 482 (2020).

[8]. Saryanti, D., Setiawan, I. & Safitri, R. A. Optimasi Formula Sediaan Krim M/A Dari Ekstrak Kulit Pisang Kepok (Musa acuminata L.). J. Ris. Kefarmasian Indones. 1, 225–237 (2019).

[9]. Akuntansi, J. & Ratulangi, U. S. 1, 2, 1, 2, 02, 493–496 (2018).

[10]. Baliyan, S. et al. Determination of Antioxidants by DPPH Radical Scavenging Activity and Quantitative Phytochemical Analysis of Ficus religiosa. Molecules, 27, (2022).