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Purple Ruellia Flower (Ruellia Simplex Wright) Ethanol Extract Lotion as Skin Moisturizer

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ABSTRACT

Purple ruellia flower is a garden and yard ornamental plant that we often find in our environment. This study aims to determine whether purple ruellia flowers in a certain concentration are able to provide moisture and do not cause skin irritation. Purple ruellia flowers were macerated with 96% ethanol solvent, then ethanol extract of purple ruellia flowers was made with concentrations of 1%, 1.5%, 2%, 25%, and blanks. The results showed that purple ruellia simplex Wright flower ethanol extract lotion could be used as a homogeneous skin moisturizer, at concentrations of 1%, 1.5%, 2%, 2.5% stable in terms of odor changes. The ethanol extract of purple ruellia flower (Ruellia simplex Wright) in a concentration (2.5%) had a water content of (47.3%), almost the same as the comparison lotion on the market (CITRA) of (47.6%) in the "moist" category. , studied moisturizing lotion preparations do not irritate the skin.

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1. Introduction

Cosmetics are substances that are used to beautify oneself. Cosmetics are generally a mixture of various chemical compounds, some made from natural sources mostly synthetic materials. The subject or procedure for using cosmetics is called make-up [1]. The skin is one of the organs of the body that is on the outside of the human body. This organ coats all organs of the body, envelops the flesh, as well as the organs in it. The main function of the skin is to protect parts of the body from various kinds of disturbances from outside the body and respond stimuli from outside the body. [2] Skin can affect a person's appearance and personality and characterize various signs of life such as race, genetics, aesthetics, culture and nation. skin can also be an indicator of health. [3] Purple ruellia flower is one of the flower plants that are often found in the yard or on the roadside as an ornamental plant. Purple ruellia plants are easy to grow in environmental conditions with full sun intensity or even in the shade. The soil conditions that are suitable for the development of purple ruellia are soils with medium to high humidity. [4]

Figure 1. Purple Ruellia Flower Plant.

The chemical compounds contained in the purple ruellia flower plant are active substances in the form of alkaloids, flavonoids, saponins, steroids and terpenoids, tannins [5]. Purple ruellia plant (Ruellia simplex Wright) is a type of the genus Ruellia which is a tropical plant and is widely found in Southeast Asia. Traditionally ruellia is used for treatment as a diuresis, antipyretic, antihypertensive and antidote. n one area in Sukabumi, namely Kalapanunggal, the leaves of this ruellia are used as an anti-diabetic which is used only by brewing the dried leaves first like brewing tea. [6] In this case the purple ruellia flower has more interesting benefits. Apart from being an ornamental plant, purple ruellia flower plants have attractive flower colors so they are often used by children to play. Based on the things mentioned above, the writer is interested in researching

"The formulation of a moisturizing lotion preparation using purple ruellia flower extract as a skin moisturizer".

2. Method

Plant sampling
Sampling was carried out purposively, that is, without comparing samples with the same plants from other areas. The sample used was purple ruellia flower obtained from the Pancur Batu area, Deliserdang Regency, North Sumatra Province.

Identification of samples
Plant identification was carried out at the Herbarium Medanense (MEDA) University of North Sumatra, Medan.

Sample processing
Purple ruellia flowers were washed under running water until clean and drained, then the wet weight was weighed, sliced and dried in a drying cabinet at 40–50 °C, until dry with a brownish purple color and brittle. Then mashed using a blender, then sifted and stored in a well-closed container**.**

Making purple ruellia flower ethanol extract
A total of 300 g of dried purple ruellia flower powder was put in a dark glass container, then macerated with 1.75 liters of 96% ethanol as solvent. Covered, and stored at room temperature for 5 days protected from light while stirring occasionally, then filtered to obtain maserate (I). The pulp was macerated again with 1.25 liters of 96% ethanol for 2 days using the same procedure until the maserate (II) was obtained. Maserat I and Maserat II were merged, sorted and poured. Concentrated with a rotary evaporator at aData was collected by giving a questionnaire. Mother's knowledge about basic immunization with 22 statements with answer choices a, b, c and d. The test is used. After obtaining the results, the data will be processed using frequency analysis and descriptive analysis temperature of 40-500C until a thick extract is obtained. [7]

Lotion base modification formula
The basic formula of the lotion is made in the form of a modification that is not using glycerin, and using rose perfume.

R/	Asam stearat		3
	Setil alcohol		1
	Adeps lanae		1
	Ekstrak etanol bunga ruellia ungu		X
	Nipasol		0,10
	Nipagin		0,15
	Trietanolamin		0,75
	Parfum mawar		3
	Akuades	Ad	100

Information:
x : purple ruellia flower ethanol extract

Making lotion preparations
The manufacture of purple ruellia flower extract used in lotion preparations was made in various concentrations, namely: 1%, 1.5%, 2%, and 2.5% as well as blanks. The formula for the lotion preparation of purple ruellia flower ethanol extract which can be seen in Table 1.

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TABLE 1.
FORMULA FOR LOTION PREPARATION OF PURPLE RUELLIA FLOWER ETHANOL EXTRACT

NO.	Formula	EEBRU	Basic Lotion
I	A	0	100
II	B	1	99
III	C	1,5	98,5
IV	D	2	98
V	E	2,5	97,5

Information:
LEEBRU : Purple Ruellia Flower Ethanol Extract Lotion
Formula A : Blank 0
Formula B : LEEBRU 1%
Formula C : LEEBRU 1.5%
Formula D : LEEBRU 2%
Formula E : LEEBRU 2.5%

How to Make Lotion
In the evaporating dish, stearic acid, cetyl alcohol, and adeps lanae were added and then heated on a water bath until they melted completely to obtain Mass (I). In a glass beaker put nipasol, nipagin, glycerin, and TEA dissolved in hot water, obtained Mass (II). Into the preheated mortar, put the parts of Mass I and Mass II which are still hot while constantly grinding until they are homogeneous, so a lotion base is obtained. [8]

Preparation stability test
Each lotion formula is put in a well-closed container, stored in a place protected from direct sunlight and measured stability parameters such as odor, color, phase separation for 12 weeks at a temperature of 27 0 C with observations every 2 weeks. [9]

Irritation test on volunteers
Irritation test was carried out on the preparation of ethanol extract lotion of purple ruellia flower (Ruellia simplex Wright) with the aim of knowing that the lotion made could cause irritation to the skin or not. Irritants can be divided into 2 categories, namely primary irritations that will appear immediately after attachment or contact with the skin, and secondary irritations whose reactions only appear a few hours after touching or sticking to the skin. [10].
The method: the preparation is applied behind the ear or on the forearm, then left for 24 hours and seen if it occurs in the form of redness, itching, and roughening of the skin.

Moisture Effectiveness Test Using Skin moisture detector
Testing the effectiveness of moisture using the Skin moisture detector (SG-7D□). [11]. Measurement of the effectiveness of moisture begins by measuring the initial condition of the skin on the back of the volunteer's hand. Then applied every morning and evening lotion preparation of purple ruellia flower ethanol extract. On the skin of the back of the hand, once a week the changes were measured up to four times the measurement. The measurement of the effectiveness of humidity aims to see how much influence the lotion preparation of purple ruellia flower ethanol extract has to moisturize dry skin.
Determination of the ability of the preparation to moisturize the skin was carried out on 18 volunteers and divided into 6 groups, each group consisting of 3 people, namely:

a. Group I : 3 volunteers for lotion base (Blank)
b. Group II : 3 volunteers for lotion (containing 1% EEBRU).
c. Group III : 3 volunteers for lotion (containing 1.5% EEBRU)
d. Group IV : 3 volunteers for lotion (containing 2% EEBRU)
e. Group V : 3 volunteers for lotion (containing 2.5% EEBRU)
f. group VI : 3 volunteers for comparison lotion (CITRA).

3. Results

The Result of Making Moisturizing Lotion Preparations

Figure 2. Results of Making Lotion Preparations

Information:
LEEBRU : Purple Ruellia Flower Ethanol Extract Lotion
Formula A : Blank
Formula B : LEEBRU 1%
Formula C : LEEBRU 1.5%
Formula D : LEEBRU 2%
Formula E : LEEBRU 2,5%

Preparation stability test

The results of the observation of the stability of the preparation were carried out for 12 weeks.

TABLE 2.
THE INSTANTANEOUS STABILITY OBSERVATION DATA WAS COMPLETED FOR UP TO 12 WEEKS OF STORAGE.

Formula	Pengamatan Selama Penyimpanan														
	Setelah Dibuat			Setelah 1 Minggu			Setelah 4 Minggu			Setelah 8 Minggu			Setelah 12 Minggu		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Information:
LEEBRU : Purple Ruellia Flower Ethanol Extract Lotion
Formula A : Blank
Formula B : LEEBRU 1%
Formula C : LEEBRU 1.5%
Formula D : LEEBRU 2%
Formula E : LEEBRU 2,5%
X : Color chang
Y : Change in smell
Z : Phase separation
- : No change
+ : There is a change

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Irritation Test Results on Volunteers

The results of the irritation test on volunteers were smeared with lotion preparations on the thin skin behind the ears, and left for 24 hours. The irritation test data for volunteers' skin can be seen in Table 3.

TABLE 3.
IRRITATION TEST DATA ON VOLUNTEERS' SKIN

Formula	Sukarelawan																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	O	P	Q	O	P	Q	O	P	Q	O	P	Q	O	P	Q	O	P	Q
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Information:
LEEBRU : Purple Ruellia Flower Ethanol Extract Lotion
Formula A : Blank
Formula B : LEEBRU 1%
Formula C : LEEBRU 1.5%
Formula D : LEEBRU 2%
Formula E : LEEBRU 2,5%
O: Redness
P : Itching
Q : Roughing
- : No change
+ : There is a change

Figure 3. the results of the iritai test before being applied

Figure 4. the results of the irritation test when applied

Figure 5. irritation test results after 24 hours of application.

Moisture Effectiveness Test Results
Testing the effectiveness of moisture using Skin moisture detector (SG-7D), moisture effectiveness test data can be seen in Table 4.

TABLE 4.
MOISTURE EFFECTIVENESS TEST DATA PREPARATIONS

No.	Formula	Suka Relawan	Sebelum Pemakaian	Minggu Ke I	II	III	IV
1.	A	1	31	33	33	34	34
		2	32	34	35	35	35
		3	32	34	34	35	35
		Rata-rata	32,2%	34%	34,3%	35%	35%
2.	B	1	32	41	41	45	45
		2	33	39	42	45	47
		3	33	41	45	46	46
		Rata-rata	33,2%	40,1%	42,6%	45,3%	46%
3.	C	1	33	42	45	46	46
		2	32	41	42	47	47
		3	30	43	45	47	49
		Rata-rata	32,1%	42%	44%	46,6%	48,5%
4.	D	1	32	42	45	47	46
		2	31	44	46	46	49
		3	30	43	44	48	47
		Rata-rata	31,9%	42%	45%	47%	47,3%
5.	E	1	34	42	44	46	48
		2	33	41	43	45	48
		3	34	42	44	47	46
		Rata- rata	34,2%	41,%	43,6%	46%	47,3%
6.	F	1	32	39	42	44	48
		2	32	42	45	46	46
		3	32	42	46	48	49
		Rata-rata	32,0%	41%	44,3%	46%	47,6%

Information:
LEEBRU : Purple Ruellia Flower Ethanol Extract Lotion
Formula A : Blank
Formula B : LEEBRU 1%
Formula C : LEEBRU 1.5%
Formula D : LEEBRU 2%
Formula E : LEEBRU 2,5%
Formula F: Comparative Lotion on the Market (Citra)

4. Discussion

The Result of Making Moisturizing Lotion Preparations
Moisturizing lotion preparations are made using a basic lotion formula. [8] Ethanol extract of purple ruellia flower was used to make moisturizing lotion preparations in concentrations of 1%, 1.5%, 2%, 2.5% and blank.

Preparation stability test
Based on Table 2 above, it shows that, all formulas that have been observed have no changes in odor, change in phase and change in color during 12 weeks of storage. This shows that the ethanol extract lotion of purple ruellia flower is stable in storage for 12 weeks. The stability of a pharmaceutical preparation can be seen from the presence or absence of changes in color, odor during storage. These changes occur if the changes contained in the preparation are oxidized. [12].

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Irritation Test Results on Volunteers

Based on the data in Table 3 above, it shows that, there are no visible side effects in the form of redness, itching, and roughening caused by the lotion preparation that is applied. This shows that the purple ruellia flower ethanol extract lotion did not cause irritation to the volunteers' skin.

Based on the data above, it shows that there are no visible side effects in the form of redness, itching, and roughening caused by the lotion preparation that is applied. This indicated that the purple ruellia flower ethanol extract lotion did not cause irritation to the volunteers' skin.

Moisture Effectiveness Test Results

Testing the effectiveness of moisture using Skin moisture detector (SG-7D□), moisture effectiveness test data can be seen in Table 4.

Based on data in Table 4 below it shows that, the use of the ethanol ethanol extract of Ruellia Purple (Ruellia Simplex Wright) has an effect on skin moisture after using lotions for four weeks of treatment, skin moisture increases. From the data above it can be seen that Formula E is Erabru Lotion with 2.5% concentration, it is almost close to the comparison lotion moisture in the market (image).

5. Conclusion

Based on the results of the research above, it can be concluded that the ethanolic extract of purple ruellia flower can be formulated in a stable moisturizing lotion preparation. The purple ruellia flower extract lotion at a concentration of 2.5% has 47.3% moisture, almost the same results as the comparison lotion (Image) with 47.6% moisture, including the "moist" category, and the purple ruellia flower ethanol extract lotion preparation (Ruellia simplex Wright) studied did not irritate the skin.

References

[1] "Pengertian Kosmetik, Sejarah dan Penggolongannya [Lengkap] - maknawi.net." https://maknawi.net/pengertian-kosmetik-sejarah-dan-penggolongannya/ (accessed Sep. 04, 2021).

[2] S. Fitryane, *Promosi Kesehatan*, Cetakan I. Yogyakarta: Grahu Ilmu, 2011.

[3] S. J. R. Kalangi, "Histofisiologi Kulit," *J. Biomedik*, vol. 5, no. 3, pp. 12–20, 2014, doi: 10.35790/jbm.5.3.2013.4344.

[4] T. J. Hawkeswood and B. Sommung, "Pollination of Muntingia calabura L. (Muntingiaceae) by native bees in Bangkok, Thailand," *Calodema*, vol. 421, no. 9, pp. 1–6, 2016.

[5] F. Imam1 *et al.*, "Explosion Phenomenon Observed from Seed Capsules of Pletekan," vol. 3, no. 9, pp. 96–102, 2013.

[6] F. A. Chen, A. B. Wu, P. Shieh, D. H. Kuo, and C. Y. Hsieh, "Evaluation of the antioxidant activity of Ruellia tuberosa," *Food Chem.*, vol. 94, no. 1, pp. 14–18, Jan. 2006, doi: 10.1016/J.FOODCHEM.2004.09.046.

[7] R. D. Utami, K. M. Yuliawati, and L. Syafnir, "Pengaruh Metode Ekstraksi terhadap Aktivitas Antioksidan Daun Sukun (," *Pros. Penelit. Spes. Unisba 2015*, pp. 280–286, 2015.

[8] A. C. Erungan, S. Purwaningsih, S. B. Anita, A. C. Erungan, S. Purwaningsih, and S. B. Anita, "Application Of Carrageenan In Making of Skin Lotion," *J. Pengolah. Has. Perikan. Indones.*, vol. 12, no. 2, pp. 128–143, 2009, doi: 10.17844/jphpi.v12i2.873.

[9] N. H. S. Agency, *Cosmetic Products Stability Guide*, vol. 1. 2004.

[10] Sumaiyah and E. V. D. Purba, "PEMANFAATAN EKSTRAK ETANOL BUAH ANDALIMAN (Zanthoxylum acanthopodium DC .) DALAM MASKER CLAY SEBAGAI ANTI-AGING," p. 2018, 2018.

[11] K. W. Astuti, N. P. A. D. Wijayanti, A. A. D. Lestari, I. G. A. P. Y. Artha, I. A. G. Pradnyani, and I. G. A. D. Ratnayanti, "UJI PENDAHULUAN NILAI KELEMBABAN KULIT MANUSIA PADA PEMAKAIAN SEDIAAN MASKER GEL PEEL OFF KULIT BUAH MANGGIS," *J. Kim.*, p. 50, Jan. 2018, doi: 10.24843/JCHEM.2018.V12.I01.P09.

[12] A. O. . P. M. ,da. M. H. I. 2011. H. of cosmetic S. A. T. N. Y. M. D. I. H. 11. Barrel, "Handbook of

Cosmetic Science and Technology - GoogleBuku,"2011.https://books.google.co.id/books?id=RIvOBQAAQBAJ&pg=PA298&lpg=PA298&dq=Barrel,+A.O.,+Paye,+M.,dan+Maibach+H.I.+2011.+Handbook+of+cosmetic+Science+And+Technology.+New+York:+Marcel+Dekker,+Inc.+Hal.+115.&source=bl&ots=y2rWOPKCyu&sig=ACfU3U3CFSy49LGEg9GBPez0Ul4gw4guUA&hl=id&sa=X&ved=2ahUKEwjT9aS1xenyAhUbIbcAHdSRAs4Q6AF6BAgPEAM#v=onepage&q=Barrel%2C A.O.%2C Paye%2C M.%2Cdan Maibach H.I. 2011. Handbook of cosmetic Science And Technology. New York%3A Marcel Dekker%2C Inc. Hal. 115.&f=false (accessed Sep. 06, 2021).