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		Tanpa Prosiding		
Nama :		The 1 st Cirebon International Conference (CICo) 9 September 2020		
Seminar/Konferensi				
Penyelenggara	:	STIKes Cirebon		
Judul Jurnal :		Formulation of Anti-Acne Cream Bawang Dayak Ethanol Extract		
		(Eleutherine bulbosa (Mill.) Urb.)		

No	Item	Tanggal	Halaman
1	Register akun dan submit artikel	07 Agustus 2020	1
2	Accept submission of abstract	07 Agustus 2020	2
3	Review process	04 September 2020	3
4	Acknowledgment of revision	17 September 2020	6
5	Abstract published	September 2020	9
5	Ethical approval	08 Mei 2019	10

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Jum, 7 Agu 2020 jam 20.14

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## 2. Accept submission of abstract



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Cirebon International Conference Swiss-Belhotel Cirebon, 9 September 2020 Website: http://cico.stikescirebon.ac.id Email: lp3mstikescirebon@gmail.com

Date: 7 August 2020

## Letter of Acceptance for Abstract

Dear Authors: Susi Novaryatiin\*, Astri Ayu Agustin, Syahrida Dian Ardhany

We are pleased to inform you that your abstract (ABS-104, Oral Presentation), entitled:

"Formulation of Anti-acne Cream Bawang Dayak Ethanol Extract (Eleutherine bulbosa (Mill.) Urb.)"

has been reviewed and accepted to be presented at CICo 2020 conference to be held on 9 September 2020 in Cirebon. Indonesia.

Please submit your full paper and make the payment for registration fee before the deadlines, visit our

Thank You

Best regards,



Dr. Awis Hamid Dani, M.M.Pd. CICo 2020 Chairperson



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Date: 7 August 2020

## Letter of Invitation

Dear Authors: Susi Novaryatiin\*, Astri Ayu Agustin, Syahrida Dian Ardhany

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We cordially invite you to attend our conference and present your research described in the abstract.

Please submit your full paper and make the payment for registration fee before the deadlines, visit our website for more information.

Thank You

Best regards,



Dr. Awis Hamid Dani, M.M.Pd. CICo 2020 Chairperson



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Preferred Presentation Schedule: -

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Presenter name: Susi Novaryatiin

The full name which will be printed in certificate, one person only.

## [Abstract ID: ABS-104]

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# Formulation of Anti-acne Cream Bawang Dayak Ethanol Extract (Eleutherine bulbosa (Mill.) Urb.)

Susi Novaryatiin\*, Astri Ayu Agustin, Syahrida Dian Ardhany

Department of Pharmacy, Faculty of Health Sciences, Universitas Muhammadiyah Palangkaraya, Jl. RTA Milono Km. 1,5 Palangka Raya 73111, Indonesia \*susi\_novaryatiin@yahoo.com

### Abstract

Bawang dayak (Eleutherine bulbosa (Mill.) Urb.) is a typical plant of Central Kalimantan. In the previous studies, it was known that bawang dayak ethanol extract can inhibit Propionibacterium acnes, and was aimed in the cream formulation to improve the efficiency of using traditional medicine. This study was aimed to determine the effect of bawang dayak cream storage for 30 days on physical properties and antibacterial activity compared to the preliminary studies conducted on the cream on days 0 and 7. Four formulas of cream were made by a variation of bawang dayak ethanol extract. F1 5%, F2 10%, F3 15%, and F4 20%. Then evaluated by organoleptic, homogeneity, pH, adhesion, and dispersion test. Cream potential as anti-acne was determined by antibacterial activity test against Propionibacterium acnes, using a disc-diffusion technique. The results showed that F3 dan F4 cream meets the requirements for pH, adhesion, and dispersion test, but not homogenous. The adhesion time in this study was better than the formula on day 7. All cream formula on the 30 days of storage showed weak activity against Propionibacterium acnes. This present study showed the potential of all formula as anti-acne cream but further research needed to improved formula composition and stability so it can be developed as an anti-acne cream product. (Approx. 211 words)

Keywords: Anti-acne cream; Bawang dayak: Propionibacterium acnes; Physical properties

Topic: Health, Medical, Pharmacy and Technology

Type: Oral Presentation

Info:



## Formulation of Anti-acne Cream Bawang Dayak Ethanol Extract (Eleutherine bulbosa (Mill.) Urb.)

## Susi Novaryatiin\*, Astri Ayu Agustin, Syahrida Dian Ardhany

Department of Pharmacy, Universitas Muhammadiyah Palangkaraya, Jl. RTA Milono Km. 1.5 Palangka Raya 73111, Indonesia

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### \*susi novaryatiin@yahoo.com

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Abstract Barrang dayak (Bandreire bulbera (Mill) Vih) is a typical plant of Central Kalimatatha In the pervious stolies, it was known that buroung drayk ethanol entract can ishbit Propinsultanterium conex, and was made in the cream formulation to improve the efficiency of using traditional medicines. His study was aimed to determine the effect of toward galaxy cream strange for 10 days on physical properties and abstractial civity conqueate to the preliminary studies conducted on the cream on days O and 7. Four formulas of Foram were made by a variation of housing apple challender each 197, 12 (10 fc, 87 13%, and 49 Vih). These evaluable by expanded policy and the contraction of the cream on delays on an dispersion test. O ream potential as anti-care and extensioned by anthesterial activity they against Propinsultanterium conex, using a discussion testings. The results showed that 17 das 14 cream formulas on the 30 days of storage showed weak activity against Propinsultanterium conex. This present that the formulas on day 7. All cream formulas on the 30 days of storage showed weak activity against Propinsultanterium conex. This present thing shows the propinsultanterium conex. This present thing shows the propinsultanterium conex. This present thing showed the potential of all formulas against propinsultanterium conex. This present thing showed the potential of all formulas auti-care cream to further conex for further exercises bedded to improve formulas composition and stability or it can be developed as an artis-care cream product.

### Keyword: anti-acne cream, bawang dayak, Propionibacterium acnes, physical properties

### 1. Introduction

I. Introduction
Actor (axor vigoric) is a skin disease that attacks the pilosebaceous skin, namely the sebaceous glands
and hair folliche. Actor causes noninflammatory lesions (open and closed comedones), inflammatory
lesions (appules, purtules, and nodules), and varying degrees of scarring. Actor formation occurs due to
follicle blockage by dead cells, sebum and inflammation caused by Propionisheterium carser in
sebaceous folliched [1,2]. P. carser was involved in the development of inflammatory are by activating
complements and metabolizing sebaceous trighyerides into fathy acids that irritate the follicular wall
and accountage in the contraction of and surrounding dermis [3].

erine bulbosa (Mill.) Urb.) is a typical plant of Central Kalimantan. This plant Bawang davak (Eleuth Brawing dayar (Leutenterine dunosor (MILL) VID.) is d'yorcal pant of cettral Kammantan. Inis plant has been used for generations by the Dayak people as traditional medicine. Empirically, the bulb part of bawang dayak is known to have properties to treat tulers or skin diseases. Active compounds contained in bawang dayak bulb that can provide antibacterial activity include alkaloids, glycosides, flavonoids, phenols, steroids, and tannins [4,5].

phenols, steroids, and tamins [4,5].

In the previous studies, it was known that bawang dayak ethanol extract can inhibit

Propionibacterium acrees, and was made in the cream formulation to improve the efficiency of using

traditional medicine. The results of the homogeneity test on day 7 were separate and non-homogenous traditional medicine. The results of the homogeneity test on day? were separate and non-homogenius (F) and F-(I) that differential perfamiliable froptical application. On day (P) E and F2 down multipoterial activity in the category weak activity, F3 and F4 in the category moderate activity, while on day? T all formula have antiheacterial activity in the category weak activity [6]. This study was a unset to determine the effect of howard grant cerem storage for 50 days on physical properties and authoracterial activity compared to the preliminary studies conducted on the cream on days 0 and 7.

2.1. Collection of plant
Bawang Dayak (Eleutherine bulbosa (Mill.) Urb.) were collected from Sei Gohong Village.

2.2. Preparation of plant extract
The plant materials were dried under the sun for 5-7 days. The dried plant materials were crushed by grinder. The powder of the plant materials was extracted with 96% ethanol using percolator

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please write the origin of plant completely

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2.3. Formulation preparation

2.1. Formulation proposations of the formulation components used are listed in Table 1. The components consist of oil-soluble (stearic acid, adeps lanae, and paraffin liquid) and water-soluble (triedhnoslamine, nipagin, and aquadent). Each solution—oil soluble and water soluble—heated up to 57°C until melts: Ethnosic extract of beware departs dissolved in aquadent, then put into water-soluble and time until homogeneous in a nortar, oil-soluble and gradually, tir until the cream base was formed. The last add oleum roses and stir ad liquid to the contract of the cont

Table 1. Formulation of an anti-acne cream bawang dayak ethanol extract.

Material	Account (mg)				
	Formula 1 (F1)	Formula 2 (F2)	Formula 3 (F3)	Formula 4 (F4)	
Bawang dayak ethanol extract	1250 (5%)	2500 (10%)	3750 (15%)	5000 (20%)	
Ol. Rosae	15 gtt	15 gtt	15 gtt	15 gtt	
Oily-phases					
Stearic acid	5000	5000	5000	5000	
Adeps lanae	750	750	750	750	
Paraffin liquid	6250	6250	6250	6250	
Aqueous-phases					
Triethanolamine	375	375	375	375	
Nipagin	25	25	25	25	
Aquadest ad	25000	25000	25000	25000	

### 2.4. Physical property tests on cream

- 2.4.1. Organoleptic test. Cream preparations that have been made are observed in color, odor, and texture. The experiment was replicated 3 times.
- 2.4.2. Homogeneity test. The particle size was observed on the slide to find the coarse particles. Preparations should show a homogeneous composition and no visible coarse grains [7].
- 2.4.3. pH test. Determination pH of the preparation is done using a pH meter [8].

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how many replication in antibacterial activity test is not mentioned

2.4.4. Adhesion start A total of 0.5 g of preparation were spread on the disc glass, on top of it, other glass objects placed and pinned under 1 kg load for 1 min. Then, disc glass mounted on test equipment, the load is released, and the time was recorded up to the second object of the glasses falling off [9].

2.4.5. Dispersion test. Cream with 0.5 g was placed in the middle of a round glass scale. Round glass which has been weighted placed thereon and left for 7 min. After that followed with 30 g load, let stand for 1 min and record the diameter of the spread cream, did the same thing with 100 g and 150 g [9].

not a min an execute the dutient of the special cream, and the same tange with 100 g and 100 g py.

2.5. Antihocterial activity set against Propionihocterian activity against Propionihocterian across, using a dis-difficient techniques with four variations of concentration of 5% (71), 10% (72), 15% (73), 10% (72), 15% (73), 10% (74), 1

## 3. Results and Discussion

3.1. Bawang Dayak (Eleutherine bulbosa (Mill.) Urb.) bulb extract. From 5.3 kg of bawang dayak bulb percolated with 96% ethanol solvent produced 315.6 grams of thick extract, extract yield of 555% w/w.

3.2.1. Organoloptic test. The result of the organoleptic test showed that F1 had a lighter brown color and odor than other formulas (Table 2). The difference in color is due to differences in the concentration of bawang dayak ethanol extract in the four formulas.

Table 2. The result of organoleptic test.						
Formula (F)	Color	Odors	Texture			
1	Light brown	Thypical of bawang dayak	Semi-solid			
2	Brown	Thypical of bawang dayak	Semi-solid			
3	Dark brown	Thypical of bawang dayak	Semi-solid			
4	Dark brown	Thyrical of hawang dayak	Semi-solid			

3.2.2. Homogeneity text. This study showed that on day 30, F1 and F2 were homogeneous, but F3 and F4 showed a separation phase between the oil phase and the aqueous phase (Table 3). In a previous which, it was known that on day of all formulas were homogeneous, while on day r S1 and F4 were not homogeneous, which was indicated by the separation of the oil phase dan the aqueous phase [6].

Table 3. The result of homogeneity test. Formula (F) Homogeneous Homogeneous Not homogeneous Characteristic
No coarse grain No coarse grain There are coarse grain There are coarse grain

3.2.3. pH text. Table 4 showed the result of a pH text on day 30, where F1 was 5.6 and the other formula was 6. The pH obtained in this study is nearly the same as the results of previous studies conducted on days 0 and [7]. The pH that suitable for topical application is the same with skim pH, between 4.5.6 [16].

	Table 4. The result of pH test.				
Ì	Formula (F)	pH (mean ± SD; n=3)			
	1	5.6 ± 0			
	2	6 ± 0			
	3	6±0			
	4	6+0			

3.2.4. Adhesion text. The results showed that the ability of the cream to adhere to the skin was more than 4 sh or 13 and 14 (sky 30) (Table 5). In the previous study was known that the adhesion test of cream on day 0 was more than 4, which term for although excrease unday 17 [1]. The adhesion text of the cream serves to find out how long the cream adheres to the skin surface. The longer the cream attached to the kin, the more active substance is absorbed. A cream meets the requirements if it has adhesion for more than 4 s [11].

Table 5. The	Table 5. The result of adhesion test.		
Formula (F)	Adhesion time (s)		
	$(mean \pm SD; n=3)$		
1	1.9 ± 1.0		
2	$2.6 \pm 2.0$		
3	$4.6 \pm 2.5$		
4	41±12		

3.2.5. Dispersion text. The dispersion text aims to determine the softness of the cream mass so that it can be seen the case of applying the preparation to the skin. The requirements for the dispersion text with the addition of a final load of between 5.7 cm [12]. In this study, it is known that F2 does not meet the requirements because it has dispersive power of less than 5 on Table 6). In a previous study, on days 0 and 7, F1 and F3 met the requirements for the dispersion text [7].

Table 6. Th	Table 6. The result of dispersion test.			
Formula (F) Dispersive power (cm)				
	(mean ± SD; n=3)			
1	$6.4 \pm 0.2$			
2	$4.6 \pm 1.2$			
3	$5.6 \pm 0.7$			
4	$5.3 \pm 0.8$			

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what is the importance of homogeneity test is not m

3.3. Antihacterial activity test against Propiosikacterium across:

The antihacterial activity can be classified into three levels; weak activity (inhibition zone lower than 12 mm), moderate activity (inhibition zone between 12 and 20 mm), and strong activity (inhibition zone higher than 20 mm) [13]. Accordingly, all cerea formula of beaming dayle defined activate of day 50 have weak activity against Propiosidacterium across, whose inhibitions zones were in the range of 5.6 have each activity against Propiosidacterium across, whose inhibitions conceived to day 50 flavore 183 mm inhibition zone (weak activity), F2=9.53 mm (weak activity), F3=12.47 mm (moderate activity), and F4=12.53 mm (moderate activity), which all formula which stands until 7 days have decrease zone of inhibition in category weak activity), billion conceives one day 7 may be caused storage not in a cool area like in a refrigerator, so it was needed to develop the research further [7].

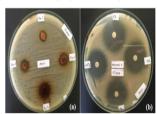


Figure 1. Antibacterial activity of cream formula of bawang dayak ethanol extract (a) and clindamycin as a positive control (b).

Table 7. Zone of inhibition of bawang dayak cre				
Formula (F)	Zone of inhibition (mm)			
	(mean ± SD; n=3)			
1	$5.6 \pm 1.4$			
2	$7.8 \pm 1.2$			
3	$9.6 \pm 2.1$			
4	89±15			

Table 8. Zone of inhibition of clindamycin.			
Concentration	Zone of inhibition (mm)		
(%)	(mean ± SD; n=3)		
0.5	24.6 ± 0.7		
1	$26.9 \pm 3.2$		
2	$27 \pm 0.6$		
4	$28.8 \pm 0.9$		

In this study, clindamycin was used as a positive control. The inhibition zones produced by clindamycin with concentration 0.5%, 1%, 6%, and 4% against P cores were 2.6%. 0 mm,  $1.69\pm2.7$  mm,  $1.29\pm3.7$  mm,  $2.79\pm3.7$  mm,  $2.79\pm3.7$ 

P. carner that caused axne vulgaris although zone of inhibition smaller than clindarsycin. In the previous studies was known that havang davak ethanol extract contained The secondary metabolites such as effectivenessly, alkaloids, asponius, and tunnius contained in bawang dayak ethanol extracts can be responsible for the authocterial activity against P. carner [7].

4. Conclusion
The results above often E7 of an F4 cream meets the requirements for pH, adhesion, and dispersion test, but not homogeneous. The adhesion time in this study was better than the formula on day? A. All cream formula on the 50 days of storage aboved week activity against Propioulisativitim acreas. This present study showed the potential of all formula as an air-ance ream briffiner research needed to improved formula composition and stability so it can be developed as an anti-acre aream product.

- Reterraces
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## 4. Acknowledgment of revision

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	Topic	: Health, Medical, Pharmacy and Technology
	Info	:

### Formulation of Anti-acne Cream Bawang Dayak Ethanol Extract (Eleutherine bulbosa (Mill.) Urb.)

Susi Novaryatiin¹\*, Astri Ayu Agustin¹, Syahrida Dian Ardhany¹

Department of Pharmacy, Universitas Muhammadiyah Palangkaraya, Palangka Raya,

\*susi\_novaryatiin@yahoo.com

"suus\_novaryatun@yahoo.com
Abstract. Bawang dayak (Eleutherine bulboca (Mill.) Urb.) is a typical plant of Central Kalimantan. In the previous studies, it was known that bawang dayak ethanol extract can inhibit Propionibacterium canes, and was made in the cream formulation to improve the efficiency of using traditional medicine. This study was amed to determine the effect of bewang dayak cream storage for 30 days on physical properties and antibacterial activity compared to the preliminary studies conducted on the cream ond ays 0 and 7. Four formulas of cream were made by a variation of bawang dayak ethanol extract [1756, F210%, F313%, and F420%. Then evaluated by organoleptic, homozeneity, Pla, adhesion, and dispersion test. Cream potential as anti-acte was determined by ambacterial activity test against Propionibacterium canes, using a discretification technique. The results showed that F3 dar 4 cream meets the requirements for pla, adhesion, and dispersion test, but not homogeneous. The adhesion time in this study was better than the formula on day 7. All cream formula on the 50 days of storage showed week excitivity against Propionibacterium canes. This present study showed the potential of all formula as anti-acne cream to further research needed to improved formula composition and stability so it can be developed as an anti-acne cream product.

### Keyword: anti-acne cream, bawang dayak, Propionibacterium acnes, physical properties

#### 1. Introduction

Acme (acres vulgaris) is a skin disease that attacks the pilosebaceous skin, namely the sebaceous glands and hair follicles. Acne causes noninflammatory lesions (open and closed comedones), inflammatory lesions (spaques, pustules, and modules), and varying degrees of scarring. Acne formation occurs due to follicle blockage by dead cells, sebum and inflammation caused by Propionibacterium acres in esbaceous follicles [1,2]. P. acnes was involved in the development of inflammatory cane by activating complements and metabolizing sebaceous triglycerides into fatty acids that irritate the follicular wall and surrounding dermis [3].

Bawang dayak (Eleatherine bulbosa (Mill.) Urb.) is a typical plant of Central Kalimantan. This plant has been used for generations by the Dayak people as traditional medicine. Empirically, the bulb part of bawang dayak is known to have properties to treat ulcers or skin diseases. Active compounds contained in bawang dayak bulb that can provide antibacterial activity include alkaloids, glycosides, flavonoids, phenols, steroids, and tanning [4,5].

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- 2.4.3. pH test. Determination pH of the preparation is done using a pH meter [8].
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- 2.4.5. Dispersion test. Cream with 0.5 g was placed in the middle of a round glass scale. Round glass which has been weighted placed thereon and left for 5 min. After that followed with 50 g load, let stand for 1 min and record the diameter of the spread cream, did the same thing with 100 g and 150 g [9].

2.5. Antibacterial activity test against Propionibacterial activity against Propionibacterium acnes;
A cream formula was tested to determine an antibacterial activity against Propionibacterium acnes;
using a disc-diffusion technique with four variations of concentration of 5% (FI), 10% (F2), 15% (F3),
and 20% (F4). The McFarland of 5 standard prepared and 10 ml. put into steriel tubes. The bacterial
suspension made by taking bacterial colonies diluted in sterile normal saline and the turbidity adjusted
to 1-xx10 °CFUmf. (acording to McFarland of 5 standard). A sterile cotton swab was immersed in a
standardized bacterial suspension and was used to evenly inoculate on Mueller-Hinton agar plate. Then,
all the discs that immersed in the cream formula of bawang dayak ethanol extract placed on the plates.
A clindamycin antibiotic used as positive controls with concentration variations of 0.5%, 1%, 2%, and
4%. Discs that immersed in clindamycin also placed on the plates. The plates then incubated for 24 h at
37°C. The diameter of the zone of inhibition formed was measured in mm using a caliper. The study
tenested in truplicates for each cream formula and positive control.

## 3. Results and Discussion

3.1. Bawang Dayak (Eleutherine bulbosa (Mill.) Urb.) bulb extract.
From 5.3 kg of bawang dayak bulb percolated with 96% ethanol solvent produced 315.6 grams of thick extract, extract yield of 5.95% w/w.

## 3.2. Physical property tests on cream

3.2.1. Organoloptic test. The result of the organoloptic test showed that F1 had a lighter brown color and odor than other formulas (Table 2). The difference in color is due to differences in the concentration of bawang dayak ethanol extract in the four formulas.

Table 2. The result of organoleptic test.					
Formula (F)	Color	Odors	Texture		
1	Light brown	Thypical of bawang dayak	Semi-solid		
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3	Dark brown	Thypical of bawang dayak	Semi-solid		
4	Dark brown	Thypical of hawang dayak	Semi-solid		

3.2.2. Homogeneity test. This study showed that on day 30, F1 and F2 were homogeneous, but F3 and 3.1.1. Homogeneinty test. I has study showed that on day 90, 11 and 12 were homogeneous, but 15 and 174 showed a spenaration phase between the oil phase and the squeeus phase (Table 3). In a previous study, it was known that on day 0 all formulas were homogeneous, while on day 7 F3 and F4 were not homogeneous, which was indicated by the separation of the oil phase dan the aqueous phase [61]. The homogeneity test of the cream aims to see whether all the content are combined perfectly. This homogeneity is related to the suitability of the dosage at each application. If the ingredients are not perfectly combined there may be differences in dosage or content in each formulation that is applied. traditional medicine. The results of the homogeneity test on day 7 were separate and non-homogenous (F3 and F4), but all formula pH suitable for topical application. On day 0, F1 and F2 shown antibacterial activity in the category weak activity; F3 and F4 in the category moderate activity, while on day 7 all formula have antibacterial activity in the category weak activity [6]. This study was aimed to determine the effect of bawang daysic cream storage for 50 days on physical properties and antibacterial activity compared to the preliminary studies conducted on the cream on days 0 and 7.

#### 2. Material and Methods

### 2.1. Collection of plant

ine bulbosa (Mill.) Urb.) were collected from Sei Gohong Village. Bukit Batu Sub-District, Palangka Raya, Central Kalimantan, Indonesia.

#### 2.2. Preparation of plant extract

The plant materials were dried under the sun for 5-7 days. The dried plant materials were crushed by grinder. The powder of the plant materials was extracted with 96% ethanol using percolator, and once process was finished, all extracts were concentrated and removed from the solvent using a rotary

### 2.3. Formulation preparation

2.3. Formulation preparation
The formulation components used are listed in Table 1. The components consist of oil-soluble (stearic acid, adeps lanse, and paraffin liquid) and water-soluble (triethanolamine, nipagin, and aquadest). Each solubion — oil soluble and water soluble — heated up to 5°5°C until melts. Ethanolic extract of bawang dayak dissolved in aquadest, then put into water-soluble and stir until homogeneous in a morta, oil-soluble and gradually, stir until the cream base was formed. The last add oleum roses and stir ad become many file.

Table 1. Formulation of an anti-acne cream bawang dayak ethanol extract

		0 ,		
Material	Amount (mg)			
	Formula 1	Formula 2	Formula 3	Formula 4
	(F1)	(F2)	(F3)	(F4)
Bawang dayak ethanol extract	1250 (5%)	2500 (10%)	3750 (15%)	5000 (20%)
Ol. Rosae	15 gtt	15 gtt	15 gtt	15 gtt
Oily-phases				
Stearic acid	5000	5000	5000	5000
Adeps lanae	750	750	750	750
Paraffin liquid	6250	6250	6250	6250
Aqueous-phases				
Triethanolamine	375	375	375	375
Nipagin	25	25	25	25
Aquadest ad	25000	25000	25000	25000

### 2.4. Physical property tests on cream

2.4.1. Organoleptic test. Cream preparations that have been made are observed in color, odor, and texture. The experiment was replicated 3 times.

2.4.2. Homogeneity test. The particle size was observed on the slide to find the coarse particles Preparations should show a homogeneous composition and no visible coarse grains [7].

Table 3. The result of homogeneity test.			
Formula (F)	Characteristic	Homogeneity	
1	No coarse grain	Homogeneous	
2	No coarse grain	Homogeneous	
3	There are coarse grain	Not homogeneous	
4	There are coarse grain	Not homogeneous	

3.2.3. pH test. Table 4 showed the result of a pH test on day 30, where F1 was 5.6 and the other formula was 6. The pH obtained in this study is nearly the same as the results of previous studies conducted on days 0 and 7 [7]. The pH that suitable for topical application is the same with skin pH, between 4.5-6

Table 4. The result of pH test.		
Formula (F)	pH (mean $\pm$ SD; n=3)	
1	$5.6 \pm 0$	
2	6 ± 0	
3	6 ± 0	
4	6 ± 0	

3.2.4. Adhesion text. The results showed that the ability of the cream to adhere to the skin was more than 4 s for F3 and F4 (day 30) (Table 5). In the previous study was known that the adhesion test of cream on day 0 was more than 4 s, while the time of adhesion decrease on day? [7]. The adhesion test of the cream serves to find out how long the cream adheres to the skin surface. The longer the cream attached to the skin, the more active substance is absorbed. A cream meets the requirements if it has adhesion for more than 4 s [11].

Table 5. The result of adhesion test.		
Formula (F)	Adhesion time (s)	
	$(mean \pm SD; n=3)$	
1	$1.9 \pm 1.0$	
2	$2.6 \pm 2.0$	
3	$4.6 \pm 2.5$	
4	$4.1 \pm 1.2$	

3.2.5. Dispersion test. The dispersion test aims to determine the softness of the cream mass so that it can be seen the ease of applying the preparation to the skin. The requirements for the dispersion test with the addition of a final load of between 5.7 cm [12]. In this study, it is known that F2 does not meet the requirements because it has dispersive power of less than 5 cm (Table 6). In a previous study, on days 0 and 7, F1 and F3 met the requirements for the dispersion test [7].

Table 6. The result of dispersion test.		
Dispersive power (cm)		
$(mean \pm SD; n=3)$		
$6.4 \pm 0.2$		
$4.6 \pm 1.2$		
$5.6 \pm 0.7$		
$5.3 \pm 0.8$		

3.3. Antibacterial activity test against Propionibacterium acnes

The antibacterial activity can be classified into three levels: weak activity (inhibition zone lower than
12 mm), moderate activity (inhibition zone between 12 and 20 mm), and strong activity (inhibition zone
higher than 20 mm) [13]. In this study, the antibacterial activity test of the cream against
Propionibacterium acnes was done in tripicates. Accordingly, all cream formula of bawang dayak
ethanol extract on day 30 have weak activity against Propionibacterium acnes, whose inhibition zone
were in the range of 5.6 ± 1.4 – 9.6 ± 2.1 mm (Table 7 and Figure 1). In the previous study, the inhibitory
test results on day 0 F1 have 7.8 mm inhibition zone (week activity), P2—9.5 mm (week activity),
F3=12.47 mm (moderate activity), and F4=12.53 mm (moderate activity), while all formula which
study used 1.4 mm (moderate activity), and F4=12.53 mm (moderate activity), while all formula which
study used 1.4 mm (moderate activity), and F4=12.53 mm (moderate activity), while all formula which stands until 7 days have decrease zone of inhibition in category weak activity. Inhibition zone decrease on day 7 may be caused storage not in a cool area like in a refrigerator, so it was needed to develop the research further [7].

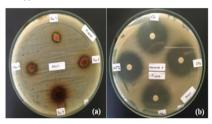


Figure 1. Antibacterial activity of cream formula of bawang dayak ethanol extract (a) and clindamycin as a positive control (b)

Table /. Zone of i	nniomon or oawang dayak cream.
Formula (F)	Zone of inhibition (mm)
	$(mean \pm SD; n=3)$
1	$5.6 \pm 1.4$
2	$7.8 \pm 1.2$
3	$9.6 \pm 2.1$
4	8.9 ± 1.5

Table 8. Zone of inhibition of clindamycin.		
Concentration	Zone of inhibition (mm)	
(%)	$(mean \pm SD; n=3)$	
0.5	$24.6 \pm 0.7$	
1	$26.9 \pm 3.2$	
2	$27 \pm 0.6$	
4	$28.8 \pm 0.9$	

In this study, clindamycin was used as a positive control. Clindamycin was known as one of the antibiotics used for acne treatment [14]. The inhibition zones produced by clindamycin with

concentration 0.5%, 1%, 2%, and 4% against P. across were  $24.6\pm0.7$  mm,  $26.9\pm3.2$  mm,  $27\pm0.6$  mm, and  $28.8\pm0.9$  mm, respectively as presented in Table 8 and Figure 1. This research showed that all cream formula with different concentration of bawang dayak ethanol extract has the potential to inhibit P. across that caused some vulgaris although zone of inhibition smaller than clindamycin. The secondary metabolities such as flavonoids, alkaloids, saponins, and tannins contained in bawang dayak ethanol extracts can be responsible for the antibacterial activity against P. across [7].

The results showed that F3 dan F4 cream meets the requirements for pH, adhesion, and dispersion test, but not homogeneous. The affection time in this study was better than the formula on day 7. All cream formula on the 30 days of storage showed weak activity against Propioulbacterium acres. This present study showed the potential of all formula as anti-acne cream but further research needed to improved formula composition and stability so it can be developed as an anti-acne cream product.

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## 5. Abstract published

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## :: Abstract ::

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Formulation of Anti-acne Cream Bawang Dayak Ethanol Extract (Eleutherine bulbosa (Mill.) Urb.)

Susi Novaryatiin\*, Astri Ayu Agustin, Syahrida Dian Ardhany

Department of Pharmacy, Faculty of Health Sciences, Universitas Muhammadiyah Palangkaraya, Jl. RTA Milono Km. 1,5 Palangka Raya 73111, Indonesia \*susi novaryatiin[at]yahoo.com

## Abstract

Bawang dayak (Eleutherine bulbosa (Mill.) Urb.) is a typical plant of Central Kalimantan. In the previous studies, it was known that bawang dayak ethanol extract can inhibit Propionibacterium acnes, and was made in the cream formulation to improve the efficiency of using traditional medicine. This study was aimed to determine the effect of bawang dayak cream storage for 30 days on physical properties and antibacterial activity compared to the preliminary studies conducted on the cream on days 0 and 7. Four formulas of cream were made by a variation of bawang dayak ethanol extract. F1 5%, F2 10%, F3 15%, and F4 20%. Then evaluated by organoleptic, homogeneity, pH, adhesion, and dispersion test. Cream potential as antiacne was determined by antibacterial activity test against Propionibacterium acnes, using a disc-diffusion technique. The results showed that F3 dan F4 cream meets the requirements for pH, adhesion, and dispersion test, but not homogenous. The adhesion time in this study was better than the formula on day 7. All cream formula on the 30 days of storage showed weak activity against Propionibacterium acnes. This present study showed the potential of all formula as anti-acne cream but further research needed to improved formula composition and stability so it can be developed as an anti-acne cream product.

Keywords: Anti-acne cream; Bawang dayak: Propionibacterium acnes; Physical properties

Topic: Health, Medical, Pharmacy and Technology

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2. Syahrida Dian Ardhany

Judul Penelitian : Formulasi Krim Anti-Acne Ekstrak Etanol Bawang Dayak

(Eleutherine bulbosa (Mill.) Urb.)

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