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Formulation and Test of Antibacterial Activity Gel Mask Peel Off Stem and Suruhan Leaves *(Peperomia Pellucida L.)* Extract Against Propionibacterium Acne

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ABSTRACT

Stems and leaves of suruhan (Peperomia Pellucida L.) contain compounds belonging to the class of flavonoids, alkaloids, tannins, phenols, terpenes and essential oils which have potential as antibacterials. This study aimed to find out whether the stem and leaf extracts of suruhan (Peperomia pellucida L.) can be formulated into a gel peel-off mask preparation that is physically and chemically stable, and can inhibit the acne-causing bacteria Propionibacterium acne. This study used a laboratory experimental method, namely the formulation of Peel off gel mask preparations of stem and leaf extracts with different base concentration variations. Testing the characteristics of the preparation which includes organoleptic test, homogeneity, spreadability test, pH test, drying time test, viscosity test using the cycling test method and for antibacterial activity test using the well diffusion method. The results showed that the gel peel-off mask preparation of suruhan stem and leaf extract (Peperomia pellucida L.) fulfilled the requirements for the characteristics of the preparation both physically and chemically, and could inhibit the growth of acne-causing bacteria (Propionibacterium acne) at a concentration of 2% (15.1 mm), 3%, (17.8 mm) and 4% (19.4 mm) in the zone of strong inhibition. It can be concluded that formulation gel mask preparations Peel off stems and leaves of suruhan (Peperomia pellucida L.) can provide antibacterial activity against Propionibacterium acne with respective inhibition zones of 15.1 mm, 17.8 mm and 19.4 mm which are equally strong in inhibiting Propionibacterium acne bacteria.

1. INTRODUCTION

Acne is an inflammatory disorder of the skin that is often worried about by teenagers and adults It can interfere with appearance, especially on the face. Acne vulgaris is a disorder in the form of inflammation of the pilosebaceous layer accompanied by blockage and accumulation of keratin material which can be triggered by bacteria. There are many causes of acne vulgaris (multifactorial), including genetic factors, racial and ethnic factors, food factors, climate factors, skin type factors, hygiene factors, cosmetic use factors, stress factors, infection factors and occupational factors [1]

Based on data of The Global Burden of Disease Study 2010 showed that acne vulgaris is the eighth most common skin disease, with an estimated global prevalence (for all ages) of 9.38%. In different countries and among different age groups, the prevalence of acne varies, with estimates ranging from 35% to nearly 100% of adolescents experiencing acne at some point.with the highest incidence occurring in adolescent boys aged 16-19 years and women 14-17 years [2].

The prevalence of acne vulgaris in Germany reaches 64% aged 20-29 years and 43% aged 30-39 years. In Southeast Asia, there are 40-80% of cases of acne vulgaris. Meanwhile, according to records

from Indonesian cosmetic dermatology, the incidence of acne vulgaris continues to increase from year to year, namely 60% in 2006, 80% in 2007 and reached 90% in 2009 (Sibero et al., 2019).

The high prevalence of acne vulgaris is related to exposure factors such as nutrition, medication, work, pollutants, climate, psychosocial and lifestyle factors. These exposure factors affect the skin's natural barrier (skin barrier) and the growth of microorganisms, causing hyperseborrhea, changes in pilosebaceous duct keratinization, loss of skin microbial diversity and inflammation [4].

Chronic inflammatory disorder of the polysebaceous unit, initially in the form of microcomedones, localized on the face. Besides that, it is also due to inflammation of the skin, inflammation of the skin can occur if the oil glands produce excessive sebum resulting in a blockage in the ducts of the oil glands and form comedones (whiteheads). If the blockage enlarges, open comedones (blackheads) will appear and interact with Propionibacterium bacteria acnes, Staphylococcus epidermis and Staphylococcus aureus causing acne (Lailiyah et al., 2021).

One of the bacteria that commonly infects acne is bacteria of Propionibacterium acnes which have similarities with normal flora on the skin, namely in the cell wall structure of gram-positive bacteria [6]. The mechanism of action of the propionibacterium acnes bacteria is by damaging the stratum corneum and stratum germinat by excreting chemicals that destroy pores causing inflammation [7].

Currently, there are many acne medications on the market in the form of gels, creams, lotions. Utilization of the anti-acne effect in preparations aimed at facial skin is better in the form of topical cosmetic products that are practical in use, in the form of gels such as peel-off gel masks (Putri et al., 2021).

Peel off gel mask is a cosmetic preparation for facial skin care that is used to the skin for a certain time, the carrier contained in the mask preparation will evaporate to make the mask dry and an elastic transparent film will form which can be peeled off. The benefits of facial masks include cleaning pores, moisturizing and nourishing facial skin. Peel-off gel masks have the advantage of being practical, because they can be easily peeled off and removed like an elastic membrane. Over time, the demand for the use of natural ingredients as active substances in the manufacture of cosmetic products is currently growing rapidly.

Therefore, in this study a gel peel off mask was made as a skin care product with natural active ingredients, namely the leaves and stems of Peperomia pellucida. Indonesia as a tropical country, has a diversity of medicinal plants. The experience of the community from generation to generation can be used as a reference for what types of plants are suitable to be used as medicine for a disease or health disorder (Bakarbessy, Tumbel, & Rehena, 2009).

One alternative that can be done to overcome acne disorders is by utilizing natural products. Several plants are used epidermally to treat infection-causing bacteria, one of which is the glass leaf or what is widely known as the suruhan plant (Peperomia pellucida L.). Suruhan plants are herbs that are found in the United States [9] and grow wild [10], it is easily available in Indonesia. The majority of these plants grow in Pinrang Regency which is known to have a lot of waters which really support soil fertility in the area. This plant has many properties so it is used from the past until now by local people to treat minor wounds and lower blood pressure [11].

Some previous studies stated that this plant contains alkaloids, steroids, terpenoids, tannins, flavonoids, glycosides, phenolics and saponins (Nurfitasari, 2018). Suruhan plant (Peperomia pellucida L.). also called “Silver Bush” belongs to the Piperaceae family. It is a herbaceous plant found in many South American and Asian countries. These plant species have a history of ethnomedical use which includes the treatment of stomach ache, abscess, acne, boils, colic, fatigue, gout headaches, kidney disorders, rheumatic pain and to treat breast cancer, impotence, measles, mental disorders and small pox [12]. The results showed that there was an effect of ethanol extract of suruhan leaves (Peperomia pellucida L. Kunth) on the healing of burns in mice (FMT Putri & Puspitasari, 2022).

Based on the description above, the formulation and activity test of the Peel off gel mask of the plant extract (Peperomia pellucida L.) will be carried out against the bacteria (Propionibacterium acne)

that causes acne infection caused by the presence of Propionibacterium acne bacterial infection to treat facial beauty problems due to acne.

The purpose of this study was to formulate a Peel off gel mask preparation from stem and leaf extracts of suruhan (Peperomia pellucida L.) which are physically and chemically stable and to find out what the optimum concentration is formulation gel mask preparations Peel off stems and leaves of suruhan (Peperomia pellucida L.) can provide antibacterial activity against propionibacterium acne.

The urgency of this research is toused as a scientific reference, especially in herbal medicine regarding information on the antibacterial effect of Peel off gel mask preparations containing stem and leaf extracts (Peperomia pellucida L.) against bacteria (Propionibacteriumacne). Anddevelopment of knowledge, especially in the pharmaceutical field regarding the preparation of Peel off gel masks from stems and leaves of suruhan (Peperomia pellucida L.).

2. METHOD

Research design

This study used a laboratory experimental method. Laboratory experiments are experiments conducted under highly controlled (not necessarily laboratory) conditions, where accurate measurements are possible (Creswell, 2014; Ágoston et al., 2015) namely the formulation of Peel off gel mask preparations of stem and leaf extracts with different base concentration variations of 2%, 3%, 4% which were then evaluated for organoleptic characteristics, homogeneity, pH, spreadability, dry time. , the viscosity was then carried out by Cycling test and tested against Propionibacterium acne.

Location and Time of Research

This research was conducted at the Phytochemical Laboratory, and Technology Laboratory and Microbiology Laboratory at Mega Rezky University Makassar starting in February-July 2022.

Tools and materials

The tools used in this study were aluminum foil, autoclave, stir bar, blender, bunsen, petri dish, porcelain cup, Erlenmeyer, beaker, measuring cup, scissors, incubator, caliper, tripod, parchment paper, electric stove. , refrigerator, coarse and fine cloth, mortar and pestle, round ossicles, oven, backup, pH meter, tweezers, dropping pipette, plastic wrap, plastic pot, tube rack, horn spoon, syringe, test tube, analytical balance, tissue and viscometer .

The materials used in this study were aquadest, stem and leaf extract of suruhan (Peperomia pellucida L.), 70% ethanol, HPMC, Sodium Agar (NA) Media, Methyl Paraben, Green Tea Aroma, Polyvinyl Alcohol (PVA), Propilenglicol. , Propionibacterium Acne, Medi-Clin Ointment, Triethanolamine (TEA).

Population and Research Sample

Population of stems and leaves of Suruhan (Peperomia pellucida L). is a plant that is often found in yards, edges of ditches and damp places.

The sample used in this experiment was the ethanol extract of the stems and leaves of suruhan (Peperomia pellucida L). obtained from Romang Lompoa Village, Bontomarannu District, Gowa Regency, South Sulawesi Province.

Peel off and Gel Mask Base Formulation DesignProcedure

a. Formula – (Negative Control)

Added Polyvinyl alcoholinto the aquadesfour times the amount of polyvinyl alcohol then heated in a beaker, stirred until it is homogeneous and the color is clear (mixture 1). Heated aquadest, dissolved sodium benzoate, added HPMC, stirred until a gel formed and swelled well, then addedinto themortar then add TEA (Triethanolamine) then crushed (mixture 2). Enteredinto themortar mixture 1 and 2 then added glycerin, crushed until homogeneous then allowed to cool until a base of Gel Peel off mask was formed.

b. Formula 1-3 (Peperomia pellucida L.) Stem and Leaf Extract Gel Mask

In making a Peel off gel mask, it starts with weighing the ingredients to be used according to the required dosage. The first step in making the mask is done by dissolving the extract in distilled water (1:2) at 50℃. Methyl paraben which has been dissolved inaquadesadded little by little into the alreadythickenwhile continuing to stir until homogeneous.

1. Evaluation of Gel Peel off Mask Preparations is carried out through a testOrganoleptic, Homogeneity Test, pH Test, Spreadability Test, Dry Time Test, Viscosity Test, and Cycling test
2. Peel off Gel Mask Antibacterial Activity Test

Data Collection and Data Analysis

Data regarding the physical properties of the Peel off gel mask preparation from the stems and leaves of suruh (Peperomia pellucida L.) can be obtained from observations of organoleptic tests, homogeneity tests, pH tests, spreadability tests, dry time tests, viscosity tests, and Cycling tests. preparations. The antibacterial test used the well method and then evaluated the Peel off gel mask preparation of the ethanol extract of the stem and leaves of suruhan (Peperomia pellucida L.) and analyzed using the SPSS 24.0 program using One Way ANOVA. The data obtained lateranalyzed descriptively to determine the strongest, moderate or weak results from the comparison between the three formulations of peel off stem and leaf suruh peel off gel masks (Peperomia pellucida L.).

3. RESULTS AND DISCUSSION

A. Stem and Leaf Extraction Results of Suruhan (Peperomia pellucida L.)

Table 1 Stem and Leaf Extract of Suruhan (Peperomia pellucida L.)

Sample	Solvent Type	Dry Sample Weight (g)	Condensed Extract Weight (g)	Render (%)
Suruhan	Ethanol 70% 4 Liters	385	47.30	12,28

B. Evaluation results of Peel off Gel Mask Preparations

a. Test Organoleptic

Table 2 Observation Results of Organoleptic Test Gel Mask Peel off Stem and Leaf Extract of Suruhan (Peperomia pellucida L.) Before and After Cycling test.

Peel off Gel Mask Formula	Test Parameters					
	Color		Smell		Form	
	Before cycling test	After cycling test	Before cycling test	After cycling test	Before cycling test	After cycling test
F0	Clear/ transparent	Clear/ transparent	characteristic odor	characteristic odor	Semi Solids	Semi Solids
F1	Green	Green	Green Tea scent	The scent of Green Tea Lilies	Semi Solids	Semi Solids
F2	Green	Green	Green Tea scent	The scent of Green Tea Lilies	Semi Solids	Semi Solids
F3	Green	Green	Green Tea scent	The scent of Green Tea Lilies	Semi Solids	Semi Solids

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration
F3: Preparation of Peel off gel mask with an extract concentration of 4%

b. Homogeneity Test

Table 3 Observation Results of Homogeneity Test of Gel Mask Peel off Stem and Leaf Extract of Suruhan (Peperomia pellucida L.) Before and After Cycling test.

Formulas	Before *Cycling test*	After *Cycling test*	Homogeneity Terms
F0	Homogeneous	Homogeneous	No coarse particles
F1	Homogeneous	Homogeneous	
F2	Homogeneous	Homogeneous	
F3	Homogeneous	Homogeneous	

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration
F3: Preparation of Peel off gel mask with an extract concentration of 4%

c. pH test

Table 4 Observation Results of pH Test of Mask Gel Peel off Stem and Leaf Extract of Suruhan (Peperomia pellucida L.) Before and After Cycling test.

Formulas	Before cycling test	After cycling test	Standard	Significatio n
F0	5.0	5,1	pH 4.5-6.5	P>0.05
F1	4,7	4,7		
F2	5,3	5.0		
F3	5,4	5,4		

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration
F3: Preparation of Peel off gel mask with an extract concentration of 4%

d. Spreadability Test

Table 5 Observation Results of Spreadability Test of Gel Mask Peel off Stem and Leaf Extract of Suruhan (Peperomia pellucida L.) Before and After Cycling test.

Formulas	Before cycling test	After cycling test	Standard	Signification
F0	5,2	5,5	5-7 cm	P>0.05
F1	5,5	6		
F2	6	5,9		
F3	5,5	5,7		

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration

F3: Preparation of Peel off gel mask with an extract concentration of 4%

e. Dry Time Test

Table 6 Observation Results of the Dry Time Test Gel Mask Peel off Stem and Leaf Extract of Suruhan (Peperomia pellucida L.) Before and After Cycling test.

Formulas	Test Parameters (min)		Standard	Signification
	Before cycling test (Minute)	After cycling test (Minute)		
F0	23	17	15-30 minutes	P<0.05
F1	25	18		
F2	24	17		
F3	24	17		

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration
F3: Preparation of Peel off gel mask with an extract concentration of 4%

Viscosity Test

Table 7 Observation Results of Viscosity Test of Mask Gel Peel off Stem and Leaf Extract of Suruhan (Peperomia Pellucida L.) Before and After Cycling test.

Formulas	Test Parameters (cps)		Standard (cps)	Signification
	Before cycling test	After cycling test		
F0	2130	2370	2000-4000	P>0.05
F1	2220	2120		
F2	2730	2560		
F3	2870	3620		

Description:
F0: Peel off gel mask preparation without extract
F1: Preparation of Peel off gel mask with 2% extract concentration
F2: Preparation of Peel off gel mask with 3% extract concentration
F3: Preparation of Peel off gel mask with an extract concentration of 4%

C. Bacterial Inhibition Zone Test Results

Table 8 Observation Results of the Inhibitory Zone Test of Peel Off Gel Mask Extract of Suruhan Stem and Leaf (Peperomia pellucida L.) against bacteria*Propionibacteriumacne*.

Formulas	Replica			Average value	Category
	I	II	III		
K+	25,3	25,9	25,6	25,6	Very strong (>20mm)
F0	0	0	0	0	There isn't any
F1	14,4	13.0	18,1	15,1	Strong (10-20mm)
F2	18,1	17,4	17,9	17,8	Strong(10-20mm)
F3	19.0	20,8	18,6	19,4	Strong (10-20mm)

Description:
K+: Medi-Clin Ointment
F0 : Peel off gel mask preparation without extract
F1 : Preparation of Peel off gel mask with 2% extract concentration
F2 : Preparation of Peel off gel mask with 3% extract concentration

F3 : Preparation of Peel off gel mask with an extract concentration of 4%

In this study used stem and leaf samplesmessenger (Peperomia pellucida L.)obtained from Romang Lompoa Village, Bontomarannu District, Gowa Regency, South Sulawesi Province. Stems and leaves of suruhan (Peperomia pellucida L.) are widely used in traditional medicine. Several studies reported that uruhan (Peperomia pellucida L.) has pharmacological effects such as antidiabetic, antihyperuricemia, anti-inflammatory, analgesic, and antipyretic, antihypertensive and sunscreen activity.(Ahmad, I., Maryono, & Mun'im, 2019).

From the results of sample processing, 385 grams of simplicia was obtained. The simplicia obtained was then extracted using the maceration method. Maceration is done to attract the desired components. The advantage is that it is more practical, the solvent used is less and the extracted active substance will not be damaged (Putra, et al., 2020).

In this study, the basic formula for Peel off gel masks was used with the active ingredients stems and leaves of suruhan (Peperomia pellucida L.), polyvinyl alcohol (PVA) was used as a gelling agent where the addition of these ingredients would produce a gel base which could form an elastic film layer. so that the film layer that is formed can be removed easily without cracking or tearing. The concentration range for using polyvinyl alcohol (PVA) in making gel is 7% – 10% [18].

Selection of Methyl paraben as a preservative in Peel off gel mask preparations because it is the most frequently used ingredient in cosmetics, food products, and pharmaceutical formulations [18]. The other additives used are 1-2 drops of green tea lilies fragrance. The basis for choosing green tea lilies fragrance is because the smell is more attractive to consumers to use the preparation. The addition of distilled water is used as a solvent because it helps dissolve the material and provides the required volume of preparation.

Evaluation of the Peel off gel mask preparation was carried out which included a preparation stability test or Cycling test which was carried out at two different temperatures, namely a low temperature of 40°C and a high temperature of 400C. This temperature difference was carried out to compare the physical stability of the preparations under different conditions. Storage is carried out using an oven and refrigerator, each 24 hours for 12 days or 6 cycles. Stability testing includes organoleptic testing, homogeneity testing, pH testing, spreadability testing, dry time testing and viscosity testing.

The organoleptic test on Peel off gel mask preparations of stem and leaf extracts (Peperomia pellucida L.) included shape, odor and color. Organoleptic testing is carried out visually or direct observation using the five senses, namely sight and smell. The results of organoleptic observations of the Peel off stem and leaf gel mask preparation of suruhan (Peperomia pellucida L.) for F0 or the base formula without the active substance of the stem and leaf extract of suruh (Peperomia pellucida L.) showed that before the Cycling test the color was clear, the odor was characteristic and the shape semi-solid dosage form and after the cycling test it shows that the color remains clear, has a characteristic odor and is a semi-solid dosage form.

Formula F1 with a concentration of 2% shows that before the cycling test it is green in color, has a distinctive smell of green tea lilies and a semi-solid dosage form and after the Cycling test shows a green color, has a distinctive smell of green tea lilies and a semi-solid dosage form, for F2 with a concentration of 3% shows that before the Cycling test it is green in color, has a characteristic smell of green tea lilies and semi-solid dosage forms and after the Cycling test it shows a green color, has a characteristic smell of green tea lilies and semi-solid dosage forms, and F3 with a concentration of 4% indicates that before the Cycling test it was green color, characteristic odor of green tea lilies and semi solid dosage form and after the Cycling test showed a green color, characteristic odor of green tea lilies and semi solid dosage form.

Likewise, the Peel off gel mask preparation of suruhan stem and leaf extract (Peperomia pellucida L.) remained stable with organoleptic characteristics in terms of color, shape and smell, even though it was stored for 12 days or 6 cycles. The results obtained according to the standard Peel off gel mask are in a semi-solid form, the color must match the specifications at the time of initial preparation of the gel mask and the smell is not rancid (Ministry of Health, 2020).

In the homogeneity test, it is carried out by means of a Peel off gel mask sample smeared on a glass object or other suitable transparent material, the preparation must show a homogeneous arrangement without visible coarse grains (Limbong, 2018). This proves that the Peel off gel mask preparation of suruhan stem and leaf extract (Peperomia pellucida L.) on a base, formula F1 at a concentration of 2%, F2 at a concentration of 3%, and F3 at a concentration of 4% is stable and homogeneous before and after the Cycling test.

In the pH measurement test of the Peel off gel mask of stem and leaf extract (Peperomia pellucida L.) was carried out to see the acidity level of the preparation in order to ensure that the preparation did not cause irritation to the skin. The pH of the preparation was measured using a pH meter. The results of pH observations on the F0 formula or formula basis the pH value before the Cycling test was 5.0 and after the Cycling test was 5.1.

Formula F1 with a concentration of 2%, the pH value before before the Cycling test was 4.7 and after the Cycling test was 4.7, for F2 with a concentration of 3%, the pH value before before the Cycling test was 5.3 and after the Cycling test was 5.0, and for F3 at 4% concentration, the pH value before the Cycling test was 5.4 and after the Cycling test was 5.4. The results of the pH test on the Peel off gel mask preparation of suruhan stem and leaf extract (Peperomia pellucida L.) before the Cycling test and after the Cycling test decreased and increased, this was due to the influence of temperature.

Changes in the pH of the four formulas after storage are generally not very significant so that it can be said that the Peel off gel mask preparation has a relatively stable pH. It was proven after statistical analysis that was used, namely SPSS in the Paired samples test showed a sig value> 0.05, which means that there was no significant difference in data between before the Cycling test and after the Cycling test.

In testing the spreading power of the Peel off gel mask of stem and leaf extract (Peperomia pellucida L.) was carried out to find out how well the Peel off gel mask preparation spreads on the skin surface. For the power spread at F0 or the base formula before the Cycling test is 5.2 cm and after the Cycling test is 5.5 cm, for F1 a concentration of 2% the spreadability before before the Cycling test is 5.5 cm and after the Cycling test is 6 cm, for F2 concentration of 3% the spreadability before before Cycling test was 6 cm and after Cycling test was 5.9 cm, for F3 concentration of 4% the spreadability before before Cycling test was 5.5 cm and after Cycling test was 5.6 cm.

In the dry preparation time test, it is observed how long it takes for the preparation to dry on the surface of the skin to form a film layer. For F0 or base formula dry time before Cycling test is 23 minutes and after Cycling test is 17 minutes, for F1 concentration is 2% dry time before before Cycling test is 25 minutes and after Cycling test is 18 minutes, for F2 concentration is 3% dry time before cycling test is 24 minutes and after cycling test is 17 minutes, for F3 concentration 4% dry time before before cycling test is 24 minutes and after cycling test is 17 minutes.

However, after statistical analysis, the SPSS used in the Paired samples test showed a sig value <0.05, which means that there was a significant or different data difference between before the Cycling test and after the Cycling test. The higher the concentration of the extract (Peperomia pellucidaL.) used, the higher the viscosity of the resulting preparation. The higher the viscosity of the preparation, the less water content is contained in the preparation. The less water content the preparation has, the faster the time it takes for the preparation to dry and vice versa.

In testing the viscosity of the Peel off gel mask preparations of stem and leaf extracts (Peperomia pellucida L.) to determine the viscosity value of the Peel off gel mask preparations. The results showed that F0 or the base formula of the viscosity test before the Cycling test was 2130 cps and after the Cycling test was 2370 cps, for F1 the concentration was 2% the viscosity test before the Cycling test was 2220 cps and after the Cycling test was 2120 cps, for F2 the concentration was 3% test the viscosity before Cycling test was 2730 cps and after Cycling test was 2560 cps, for F3 concentration 4% the viscosity test before Cycling test was 2870 cps and after Cycling test was 3620 cps.

It was proven after statistical analysis that was used, namely SPSS in the Paired samples test showed a sig value> 0.05, which means that there was no significant difference in data between before

the Cycling test and after the Cycling test in the Peel off gel mask viscosity test of stem and leaf extracts. Peperomia pellucida L.).

The results of the antibacterial activity test on Peel off gel mask preparations of stem and leaf extract (Peperomia pellucida L.) were carried out using the well-diffusion method. as an antibacterial in nutrient agar (NA) dense media.

Previous research has done that ethanol extract plant of suruhan (Peperomia pellucida L.) has the ability to inhibit acne-causing bacteria (Propionibacterium acne) [20]. This study was in accordance with the other study stated that the tests were carried out on the basis of suruhan (Peperomia pellucida L.) formulation I, formulation II and Formulation III all showed a homogeneous composition which was not marked by the presence of coarse grains [21].

The ethanol extract of suruhan leaves (Peperomia pellucida L.) has the ability to inhibit acne-causing bacteria (Propionibacterium acnes). Extracts with a concentration of 25% (6.65 mm) and a concentration of 50% (8.2 mm) had moderate inhibition. Extracts with a concentration of 75% (13.7 mm) and a concentration of 100% (17.15 mm) had strong inhibition. Thus the results obtained are influenced by the concentration of the extract tested. The higher the concentration of the extract, the greater the inhibition of the extract in inhibiting bacterial growth [20].

The error factor that affected the final results of this study was an error in weighing the ingredients so that the preparation was too thick and resulted in having to repeat it many times. Carrying out the procedure for making Peel off gel masks that are not careful and not in the order that often makes the preparation of Peel off gel masks inhomogeneous. Researchers were not careful when adding aquadest or other ingredients when making Peel off gel masks so that the preparations became liquid or thick and had to be repeated. The researcher was not careful in carrying out each test in a way that made the results not in accordance with the specified standards. Therefore, in this study, the formulation and antibacterial activity test of peel-off gel masks from stem and leaf extracts (Peperomia pellucida L.) against Propionibacterium acne.

4. CONCLUSION

From the results of research that has been done, it can be concluded that the formulation of Peel off gel mask preparation of suruhan stem and leaf extract (Peperomia pellucida L.) can be formulated into a physically and chemically stable Peel off gel mask preparation with concentrations of 2%, 3%, and 4%. And formulation gel mask preparations Peel off stems and leaves of suruhan (Peperomia pellucida L.) can provide antibacterial activity against Propionibacterium acne with respective inhibition zones of 15.1 mm, 17.8 mm and 19.4 mm which are equally strong in inhibiting Propionibacterium acne bacteria.

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