



THE EFFECT OF SECANG (*Caesalpinia sappan*) MASKS ON THE HEALING OF ACNE (*Acne vulgaris*) IN WOMEN AGED 21-15 YEARS

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Abstrak

Jerawat dapat disebabkan oleh adanya bakteri penyebab jerawat. Saat ini berbagai penelitian pengobatan jerawat dengan bahan herbal baik secara topikal maupun oral telah banyak dilakukan dengan tujuan untuk mengurangi bakteri penyebab jerawat. Beberapa penelitian menunjukkan bahwa senyawa aktif Secang, yaitu brazilin yang diekstraksi dengan metanol dan etanol 50% dalam *Propionibacterium acnes*, terbukti memiliki aktivitas antibakteri, penghambat lipase, dan antioksidan. Sehingga peneliti tertarik untuk melakukan penelitian tentang "Pengaruh Masker Secang (*Caesalpinia sappan*) Terhadap Penyembuhan Jerawat (*Acne vulgaris*) Pada Wanita Usia 21-25 Tahun". Jenis penelitian ini adalah penelitian analitik komparatif numerik berpasangan dengan menggunakan metode eksperimen dan metode pengumpulan data dengan pengukuran berulang Pretest-Posttest Control Group Design. Sebanyak 15 sampel yang berjerawat diperiksa sebelum diberikan masker secang dengan komposisi 0,5 gram ekstrak secang dan 9,5 gram tepung beras. Pengambilan data dilakukan setiap 2 minggu sekali selama 4 minggu. Data penelitian yang diperoleh akan disajikan dalam bentuk tabel kemudian diuji dengan uji-t dalam menganalisis hasil perbedaan pre-test dan post-test. Berdasarkan hasil penelitian pengaruh masker secang (*Caesalpinia sappan*) terhadap penyembuhan jerawat (*Acne vulgaris*) pada wanita usia 21-25 tahun yang dilakukan selama 30 hari dengan frekuensi 2 hari sekali menunjukkan penurunan signifikan rata-rata jumlah total lesi akne ($p = 0,00$) dibandingkan dengan posttest, dengan penurunan rata-rata 33,38. Dari hasil statistik tersebut dapat disimpulkan bahwa terapi masker secang dapat meningkatkan penyembuhan jerawat pada wanita usia 21-25 tahun yang ditandai dengan penurunan jumlah lesi jerawat, baik komedo maupun jerawat inflamasi..

Kata Kunci: Secang, Bakteri, *Acne vulgaris*, *Caesalpinia sapaan*

Abstract

Acne can be caused by the presence of acne-causing bacteria. Currently, various studies of acne treatment with herbal ingredients both topically and orally have been carried out with the aim of reducing acne-causing bacteria. Several studies have shown that the active compound of Secang, namely brazilin extracted with methanol and 50% ethanol in *Propionibacterium acnes*, has been shown to have anti-bacterial, lipase inhibitor, and antioxidant activity. So that researchers are interested in conducting research on "The Effect of a Secang Mask (*Caesalpinia sappan*) on Healing Acne (*Acne vulgaris*) in Women Aged 21-25 Years". This type of research is a paired numerical comparative analytical study using experimental methods and data collection methods with repeated measurements of Pretest-Posttest Control Group Design. 15 samples with acne were examined before given Secang mask with a composition of 0.5 grams of secang extract and 9.5 grams of rice flour. data was taken every 2 weeks for 4 weeks. The research data obtained will be presented in tabular form and then tested with the T-test in analyzing the results of the differences between pre-test and post-test. Based on the results of the study the effect of a secang mask (*Caesalpinia sappan*) on the healing of acne (*Acne vulgaris*) in women aged 21-25 years which was carried out for 30 days with a frequency of once every 2 days showed a significant decrease in the average total number of acne lesions ($p = 0.00$) compared to posttest, with a mean decrease of 33.38. From these statistical results, it can be concluded that secang mask therapy can improve acne healing in women aged 21-25 years which is characterized by a decrease in the total number of acne lesions, both comedones and inflammatory acne.

Keywords: Secang, Bacteria, acne, *acne vulgaris*, *Caesalpinia sapaan*

1. INTRODUCTION

The skin is the largest organ that covers the entire surface of the human body

which has a function as body protection against microbes from outside (Ali et al., 2019; Nilforoushzadeh et al., 2018) Skin

supports a person's appearance, especially facial skin because the face is the body part that becomes the first object of view when interacting with other people. The face is also the identity of everyone, it is also the main asset for everyone in terms of appearance, so facial skin needs to be cared for, maintained, and maintained its health. One of the most common skin problems on the face is acne. Acne is the most common inflammatory disorder of the sebaceous follicles of the skin. It is reported that more than 70% of people have acne in their teens, and it can continue into adulthood (Heng & Chew, 2020). Paik, 2020 reported the prevalence of acne at the age of puberty to 30 years to reach 80%. Among adult acne cases, women are affected more often than men. Approximately 12-22% of US women suffer from acne compared to 3% of men (Batra et al., 2020). Epidemiology of visits to the dermatologist with cases of acne was studied in America and showed that complaints of acne in adult women are more common than adolescent women. This is presumably because adults tend to apply facial make-up in larger portions than adolescent girls (Paik, 2020). Acne can cause self-confidence in sufferers, and even cause psychological problems. Depression is one most common psychological problem in adolescence and adulthood. Depression includes feelings of sadness, lack of self-worth, negative thoughts, sleep disturbances, and suicidal ideation. Acne can exacerbate feelings of insecurity which can become stronger and more durable, increasing depressive disorders and causing a high risk of suicide (Samuels et al., 2020). The etiology and pathogenesis of acne are not known with certainty, but there are four main pathogenic factors, namely increased sebum production, excessive skin cell growth so that dead skin cells that exist are not completely released in the pilosebaceous tract, bacteria on the skin and inflammation. In Traditional Chinese Medicine (TCM), acne is caused by the constitution of excessive heat in the Qi and blood, or the accumulation of heat in the lungs and stomach that rises up along the meridians, and condenses on the chest and

face. too much consumption of oily and sweet foods that causes heat accumulation in the lungs and stomach which then heats up along the meridians, plus secondary infection from wind pathogens (Agesti et al., 2020)The red color of the pimple lesion indicates the presence of bad heat, while the pus in the lesion indicates the presence of dampness and phlegm (“Chinese Guidelines for the Management of Acne Vulgaris: 2019 Update #,” 2019). Therefore, the principle of acne treatment is to suppress sebum production, reduce epithelial sloughing in the sebaceous follicles, and prevent the proliferation of acne-causing bacteria, namely *Propionibacterium acnes* and eliminate hot, humid, and phlegm pathogens in the lung, spleen and stomach meridians (Agesti et al., 2020). Awaloei et al., 2021 combines the classification of acne severity into 3 groups, namely mild, moderate, and severe acne, so that acne healing can be measured based on the decrease in the number of acne lesions. Acne treatment can be done topically and orally. Topical treatments used include benzoyl peroxide, salicylic acid, retinoic acid and its derivatives, azela acid, B vitamins, vitamin C, and macrolides. Some of the plants traditionally used as acne medications are aloe vera (*Aloe vera*), neem (*Azadirachta indica*), turmeric (*Curcuma longa*), gotu kola (*Centella asiatica*), liquorice (*Glycyrrhiza glabra*), and rose (*Rosa damascene*) which are reported to have anti-inflammatory activity and inhibit the proliferation of acne-causing bacteria (Hafeez et al., 2020; Vora et al., 2018). In a cross-sectional study Alshehri et al., 2017 showed that women were found to be significantly more likely to use self-medication. One of the most frequently used acne treatments by patients before seeking medical treatment is masks. Masks are a form of facial care preparation that are easy to make or easy to apply yourself. Masks with natural ingredients have the advantage of being easily available at a relatively cheaper price than treatment at a beauty clinic, and the preparation for their use is easier and more economical than treatment with herbal decoctions. The basic ingredient of the most

common and often used mask in Indonesia is rice flour because in addition to functioning as an adhesive and fastener, the starch in rice can nourish and brighten the skin. (Dwiyanti et al., 2017). Research on the effectiveness of secang (*Caesalpinia sappan*) as an anti-bacterial herb has been carried out by Arisanti et al., 2018 which showed that the active compound of secang, namely brazilin extracted with methanol and 50% ethanol on *Propionibacterium acnes* was proven to have anti-bacterial activity, lipase inhibitor, and anti-bacterial activity. Antioxidants (Politeknik et al., 2021). Currently, various studies of acne treatment with herbal ingredients both topically and orally have been carried out (Alexis et al., 2018; Arisanti et al., 2018; Batra et al., 2020; Politeknik et al., 2021) but treatment using a mask preparation with the main ingredient of sappan has never been done in humans and its effectiveness is still unknown. Therefore, it is necessary to conduct research on "The Effect of a Secang Mask (*Caesalpinia sappan*) on the Healing of Acne (*Acne vulgaris*) in Women Aged 21-25 Years".

2. MATERIALS AND METHODS

2.1 Samples

The population that will be used in this study is female patients of Griya Sehat Alfa Syifa who have moderate acne cases aged 21-25 years.

2.2 Methodology

As the first step of the research, the researcher conducted a cup extraction. Secang powder was purchased at *Materia Medika Batu*, Indonesia. Secang powder was extracted using 50% ethanol as a solvent by maceration. Extraction was carried out in a ratio of 1 g sample: 10 mL solvent for 12 hours with 3 replications. The obtained maserate was filtered and then concentrated at a temperature of 50oC using a vacuum evaporator to obtain a dry extract. Rice flour is made by soaking rice for 3 days, then drained to dry and then mashed until it

becomes flour. Next, make a mask by mixing secang extract with rice flour. The researcher then collected and took data on prospective research subjects at the Griya Sehat Alfa Syifa Clinic. Researchers will select and sort out research subjects according to the inclusion and exclusion criteria of the study. The next step is to confirm the approval of prospective research subjects to become research subjects by filling out Informed Consent. After obtaining approval from the research subjects, anamnesis and filling in the Patient Status Card were carried out to obtain patient data information and a pre-test was carried out. The pre-test was carried out by counting the number of acne lesions by naked eye with the Lehmann Acne Grading measurement scale carried out by a competent doctor accompanied by documentation before being given treatment. Acne grading consists of 3 categories, namely mild acne with < 20 comedones, or < 15 inflammatory lesions, or a total of < 30 lesions; moderate acne with 20-100 comedone lesions or 15-50 inflammatory lesions, or a total of 30-125 lesions; and severe acne with >100 comedone lesions, or >50 inflammatory lesions, or >125 total lesions, or >5 cystic lesions. In addition to doing acne grading, irritation test was also carried out during the pre-test. The technique used in this irritation test is an open patch test on the inner forearm. An open patch test was carried out by applying a sappan mask on the attachment location with a certain area (2.5 x 2.5 cm), left open for approximately 24 hours and observed skin reactions that occurred. A positive irritation reaction is indicated by the presence of redness, itching or swelling on the skin of the treated inner forearm (Safitri et al., 2018). After the patient showed a negative irritation reaction, the subject was given treatment in the form of a cup mask with operational procedures. Monitoring the number of acne lesions was carried out after the second week of treatment accompanied by documentation. After 4 weeks of treatment, the final data collection (post-test) was carried out on the subjects by counting the number of acne lesions by a competent



doctor with documentation. The evaluation data were analyzed using the T test to determine the effect of giving a cup of masks on reducing the number of acne lesions.

3. RESULTS

Average Change in the Number of Acne

In this study, data were taken in the form of total lesions, which were obtained from the sum of comedones and inflammatory lesions before being given treatment (pretest), after two weeks of treatment, and after treatment (posttest) to research subjects. The following is the data obtained based on the calculation of the number of acne lesions.

Table 1. Acne Lesions Count Results

Subjek	Jenis Lesi	Pretest	Monitoring	Posttest
SA	Total Lesions	53	27	18
RM	Total Lesions	64	31	13
FD	Total Lesions	56	36	26
DB	Total Lesions	47	22	20
SR	Total Lesions	59	28	13
DI	Total Lesions	47	34	23
SD	Total Lesions	62	37	28
AA	Total Lesions	65	30	21
IT	Total Lesions	45	31	22
EM	Total Lesions	49	29	16
DH	Total Lesions	42	28	19
MS	Total Lesions	46	31	18
AB	Total Lesions	56	35	20
Average Total Acne Lesions		53,15	30,69	19,76
Decrease in Total Acne Lesions		33,38		

Table 1 is the result of calculating acne lesions pretest, monitoring the 2nd week of treatment and posttest on each research subject. From the pretest to the posttest stage, there was a significant difference ($p=0.00$), this can be seen from the average decrease in the total number of acne lesions at the pretest from 53.15 to 19.76 at the posttest, so the average decrease was 33.38.

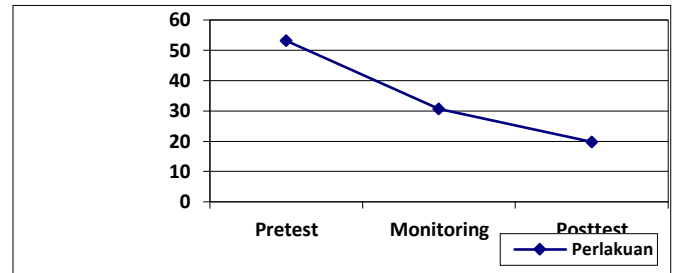


Figure 1. Graph of Decrease in the Average Number of Acne Lesions

From the graph above, it can be seen that the average change in the total number of acne lesions in monitoring showed a decrease in the average total number of acne lesions by 22,4615385 and in the posttest the average total number of acne lesions decreased by 10,9230769.

Result Test Normality

After the normality test of weight data was carried out with Kolmogorov Smirnov, it was found that all data were normally distributed ($p>0.05$), so that the statistical test calculation used paramatter statistics with the T-test.

T-Test

t-trest test was conducted to see the significance of the difference between the pre and post-test. From the pretest and posttest T-test, it show that the P value is significant ($p<0.05$) with a mean decrease of 33.385.

4. DISCUSSION

Based on the results of the study the effect of a secang mask (*Caesalpinia sappan*) on the healing of acne (*Acne vulgaris*) in women aged 21-25 years which was carried out for 30 days with a frequency of once every 2 days showed a significant decrease in the average total number of acne lesions ($p =$

0.00) compared to posttest, with a mean decrease of 33.38. From these statistical results, it can be concluded that secang mask therapy can improve acne healing in women aged 21-25 years which is characterized by a decrease in the total number of acne lesions, both comedones and inflammatory acne. The improvement in acne healing is influenced by several things, one of which is the direct reduction of inflammation of acne lesions due to the anti-inflammatory activity of the brazilin content in cup. In addition to reducing inflammation, pain in acne lesions is also reduced. Secang contains Protosappanin A which has a function as an antibacterial, which works by inhibiting the secretion of Propionibacterium acnes bacterial lipase so that bacterial colonization is reduced. Pus or a white substance in an inflamed pimple lesion indicates the presence of moist pathogens and phlegm. The bitter taste properties of secang prevent the formation of moist pathogens which are the cause of abscesses in acne. The red color of the acne lesions indicates the presence of hot PPL. White or black comedones on the face around the cheeks, nose, and forehead are caused by heat in the lungs. The salty nature of the cup is cooling and loosening so that hot pathogens, caused by poor diet and food consumption, are reduced and break down the accumulation of stagnant and hardened phlegm in cases of acne. Cups also have cooling and cooling properties to combat hot pathogens. This causes redness of the facial skin and the acne lesions are reduced. Conventionally, acne can be caused by increased sebum (fat) production, blockage of oil gland ducts, bacterial colonization and inflammation. Hormonal factors, stress, seasons, and dietary patterns can also affect the onset of acne. The food consumed can affect the production of sebum by the oil glands, where sebum is a substrate needed in the metabolism of the bacteria Propionibacterium acnes, one of the bacteria that causes acne. Excessive sebum can also cause blockages in the skin follicles, causing acne. Exposure to pollution causes secondary infection which can exacerbate the

inflammation of acne lesions (Lestari et al., 2021). According to Traditional Chinese Medicine (TCM), acne is caused by the presence of hot PPL caused by improper food intake (Agesti et al., 2020), If a person does not eat regularly or eats too much sweet, fatty and spicy food, it can cause heat accumulation in the spleen-stomach which then rises along the meridians to the face (Agesti et al., 2020; Mansu et al., 2018) causing acne. Acne is often found on the face where the colon and stomach meridians are located. Excessive heat in the stomach, plus negative emotional factors such as anger, depression, fear or stress, will cause liver depression where the Qi in the liver becomes static and creates fire. When the liver fire is excessive, the Yin liver will be depleted so that the Yin liver is unable to limit the excess Yang in the spleen and stomach so that the gastric heat moves and flares up. This excessive heat can dry out body fluids and freeze the phlegm that builds up, which can be exacerbated by the consumption of oily and fatty foods. When the phlegm collects in the space between the skin and the muscles in the upper body, a phlegm nodulation is formed. If the heat is severe enough, it can cause toxins in the blood and fluids, making the abscess worse. The phlegm and toxins can block the flow of Qi and blood in the area. If this resistance persists for a long time, blood stasis can occur. Excessive stress can also cause blood stagnation. (Balaneskovic, 2022); The working mechanism of the mask is to clean the skin in the deep layers, because by washing the face, facial steam, facial massage, and facial masks can penetrate into the skin thoroughly, and can stick to the skin that is dirty, scaly, and dead skin on the surface or follicular holes. superficial. The mask also provides a gentle stimulation that can increase blood circulation, increase blood circulation in the local area, and increase skin metabolism. Herbal masks can relatively increase the water content on the surface of the skin and have a relaxing effect on the skin and muscle fibrous tissue in the local area where the face mask is applied (Hendrawati et al., 2021; Kusumanti et al., 2017). This



study has a limited number of samples, which affects the significance of the results. This study was limited to female samples with moderate acne categories according to the acne classification by Lehmann, so the effect of cupping mask therapy on men or on severe acne is not yet known. This study does not limit the sample criteria to specific skin types, so it is necessary to do research on giving a sappan mask on which skin type is the most effective.

5. CONCLUSIONS

Based on the results of research through data analysis and discussion, it can be concluded that a secang mask (*Caesalpinia sappan*) can cure acne (*Acne vulgaris*) in women aged 21-25 years.

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