



Article

The Effect of Local Point Acupuncture Therapy with a Combination of Tamanu Oil (*Callophyllum Inophyllum*.) on Changes In The Degree of Acne Vulgaris Lesions in Students Of Sma It Ibnu Abbas Klaten

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ABSTRACT

Acne vulgaris is chronic inflammation of the sebaceous glands which has several types such as comedo, papule, pustule, nodule, and might leave scars in the form of tissue scars. Treatment for acne vulgaris can include acupuncture and the use of herbs. Acupuncture can be done by inserting filiform needles at local point around the acne lesion. Tamanu oil (*Callophyllum inophyllum*) applied topically to acne lesions can reduce inflammation and speed healing. The aim of this study was to determine the effect of local point acupuncture therapy with a combination of tamanu oil on case of acne vulgaris in female students at SMAIT Ibnu Abbas Klaten.

I. INTRODUCTION

Acne vulgaris is a chronic inflammation of the sebaceous glands which has several types such as comedo, papule, pustule, and nodule, and might leave scars in the form of tissue scars. Treatment for acne vulgaris can include acupuncture and the use of herbs. Acupuncture can be done by inserting filiform needles at a local point around the acne lesion. Tamanu oil (*Callophyllum inophyllum*) applied to acne lesions can reduce inflammation and increase speed for healing. This study aimed to determine the effect of local point acupuncture therapy with a combination of tamanu oil on the case of acne vulgaris in female students at SMAIT Ibnu Abbas Klaten.

Acne vulgaris is a skin disorder in the form of chronic inflammation of the pilose-

baceous glands⁽¹⁾. Types of acne are differentiated into blackheads (open comedones), whiteheads (closed comedones), papules, pustules on the surface or inside of the skin, nodules, and even cysts⁽²⁾. Several factors cause acne, namely: excessive sebum production, hormonal fluctuations, infection of the *Propionibacterium acnes* bacteria, inappropriate use of cosmetics, poor food intake, stress factors, consumption of several types of medication, and lack of maintaining skin cleanliness^(2,3). Generally, acne will leave inflammatory scars in the form of redness, skin hyperpigmentation, scar tissue, and keloids⁽⁴⁾.

The prevalence of acne vulgaris cases is quite high, especially in tropical countries such as Southeast Asia, namely 40 – 80%⁽⁵⁾. Acne vulgaris infected around 9% of the population worldwide, consisting

of female adolescents aged 14 - 17 years with a percentage of 83 - 85% and male adolescents aged 16 - 19 years in the range of 95 - 100%^(6,7). Factors causing acne vulgaris in male adolescents are inadequate food intake (23.2%) and stress factors (23.9%), while in female adolescents it is hormonal factors (89%) and cosmetics (89.1%)⁽⁷⁾.

Treatment for acne vulgaris can be done in many ways, one of them is acupuncture which is a non-pharmacological treatment with minimal side effects⁽⁸⁾. Acupuncture at some points especially LU5 Chize, ST40 Fenglong, LI4 Hegu, ST25 Tianshu, TE6 Zhigou, ST4 Dicang, SI18 Qianliao, ST7 Xiaguan, EX-HN3 Yintang, CV24 Chengjiang, and inserting 2 – 4 needles around the acne lesion can improve microcirculation, reduce inflammation, regulate the HPA axis which reduces stress levels and improves hormones⁽⁹⁾. Puncture according to the differentiation of acne vulgaris syndrome and local points around the lesion will kill microorganisms and repair damaged tissue because white blood cell levels increase after therapy given⁽¹⁾.

Handling cases of acne vulgaris can also be done by managing natural plants and minerals, better known as 'cosmetopoeia'^(10,11). Cosmetopoeia refers to the application of ingredients from plants that are traditionally processed for beauty and body care. Tamanu oil (*Callophyllum inophyllum*) is an example of a cosmetopoeia of the Polynesian region which can be applied routinely to acne-prone skin. The canalside and tamanolide content in serum with 1% tamanu oil showed antibacterial activity against *Propionibacterium acnes* and *Staphylococcus aureus*⁽¹²⁾. The neoflavonoid content in the form of calofylolide molecules in tamanu oil shows antimicrobial activity against the *Propionibacterium acnes* bacteria that causes acne. Kalofilolide isolated from tamanu seeds also reduces the formation of fibrosis and accelerates wound healing in keratinocyte cells and fibroblast cells⁽¹¹⁾.

This problem can get even worse if it doesn't get a good treatment to decrease

acne vulgaris lesion. Therefore, researchers took the initiative to combine local point acupuncture therapy with a herbal combination to giving tamanu oil to treat cases of acne vulgaris. Based on the data above, researchers are interested in conducting research with the title "The Effect of Local Point Acupuncture Therapy with a Combination of Tamanu Oil (*Callophyllum inophyllum*) on Changes in the Degree of Acne Vulgaris Lesions in Female Students at SMAIT Ibnu Abbas Klaten".

II. METHODS

This research started from submitting the title in August 2023 until presenting the research result in May 2024. This research used 30 samples who met the inclusion and exclusion criteria. The research method used is a quantitative method with a Quasi-Experimental Design and Purposive sampling technique.

The pretest was carried out before the research subjects were given the intervention, while the posttest was carried out after some series of interventions were carried out. The test parameter observed was the degree of acne vulgaris lesions which were divided into 3 stages, namely T0, T5, and T10. The research subjects were 30 female students from SMAIT Ibnu Abbas Klaten with the criteria of suffering from acne vulgaris. The research was carried out from January to February 2024. The independent variable was local point acupuncture therapy with a combination of tamanu oil and the dependent variable was the degree of acne vulgaris lesions.

The sample was divided into three groups, each consisting of 10 female students. Group 1 received intervention in the form of acupuncture at points EX- HN3

Yintang, EX-HN5 Taiyang, GV24 Shenting, and ST4 Dicang, Group 2 received local point acupuncture intervention twice a week with a combination of tamanu oil every day, and group 3 received local point acupuncture intervention with a combination of tamanu oil twice a week. Acupuncture therapy was carried out 10 times with frequency of 2 times every week and the degree of acne vulgaris lesions was evaluated periodically before treatment (T0), after the fifth therapy (T5), and after the tenth therapy (T10).

III. RESULT

This research used a Quasi Experimental Design which was carried out from August 2023 to March 2024. The population found in the preliminary study was 48 female students and after determining the inclusion and exclusion criteria, sample of 30 female students was obtained. The sample was then divided into three groups, each consisting of 10 female students. Group 1 received intervention in the form of acupuncture at points EX-HN3 Yintang, EX-HN5 Taiyang, GV24 Shenting, and ST4 Dicang, Group 2 received local point acupuncture intervention twice a week with a combination of tamanu oil every day, and group 3 received local point acupuncture intervention with a combination of tamanu oil twice a week.

Acupuncture therapy was carried out 10 times with a frequency of 2 times every week and the degree of acne vulgaris lesions was evaluated periodically before treatment (T0), after the fifth therapy (T5), and after the tenth therapy (T10). After obtaining data at T0, T5, and T10 from the three test treatments, the data analysis process was carried out using several methods in the form of univariate, bivariate, and multivariate with varying results. The age differences

among female students can be seen in Table 1.

Table 1. Distribution of research subjects by age

Age	Group I	Group II	Group III
15	7 (70)	1 (10)	0 (0)
16	3 (30)	4 (40)	0 (0)
17	0 (0)	5 (50)	8 (80)
18	0 (0)	0 (0)	2 (20)

The Table 1 that the age mode of the research subjects was 17 years old with a total of 13 female students (43.3%). The 30 female students who were research subjects were students with different syndromes and were categorized into 3 categories.

Table 2. Distribution of research subjects by differentiation syndrome

Symptom	Group I	Group II	Group III
Hot Wind in the Lung Meridian	7(70)	9(90)	8(80)
Damp Accumulation	2(20)	1(10)	1(10)
Phlegma Stagnation and Blood Clots	1(10)	0(0)	1(10)

The Table 2 shows that the syndrome mode of the research subjects was windburn in the Lung Meridian, totaling 24 subjects (80%).

Table 3. Distribution of research subjects by lesion degree

Lesion Degree	Group I	Group II	Group III
Medium	10(100)	10(100)	10(100)

Then, after receiving treatment with 3 different types, on giving the 5th treatment a change in the degree of lesion was obtained which is shown in the following Table 4.

Table 4. Distribution of research subjects by on degrees acne vulgaris lesions after the fifth therapy

Lesion Degree	Group I	Group II	Group III
Medium	8 (80)	4 (40)	5 (50)
Mild	2 (20)	6 (60)	5 (50)

After administering the 10th treatment test, the degree of the lesion was observed again and the following results were obtained in Table 5.

Table 5. Distribution of research subjects by on degrees acne vulgaris lesions after tenth therapy

Lesion Degree	Group I	Group II	Group III
Medium	4 (40)	0 (0)	2 (20)
Mild	6 (60)	10 (100)	8 (80)

Analysis was carried out by carrying out a data normality test which was carried out to determine the distribution of the research data. The normality test used was the Shapiro-Wilk test because the number of research subjects was <50(40). The following are the results of the Shapiro-Wilk test analysis obtained in Table 6.

Table 6. Test of Data Normality

Group	Category	N	p
Group I	Before	10	0.011
	After	10	0.012
Group II	Before	10	0.112
	After	10	0.827
Group III	Before	10	0.000
	After	10	0.000

The table above shows that the results of the Shapiro-Wilk test in groups 1 and 3 have a value of $p < 0.05$, which means the data is not normally distributed. The p number in group 2 is > 0.05 , which

indicates that the data is normally distributed, so the homogeneity test will be continued using the Lavene Test because the data is not normally distributed.

Table 7. Homogeneity Test

Group	N	p
Group I	10	0.274
Group II	10	
Group III	10	

Based on the table above, it can be seen that the lesion degree value is 0.274, which means $p > 0.05$. These results indicate that the data obtained is homogeneously distributed. Multivariate analysis was carried out using the Kruskal Wallis test and LSD Post Hoc to analyze more than two sample groups when the data was not normally distributed to determine the significance in each group.

Table 7. Kruskal Wallis Test

Group	Mean Rank	p
Group I	21.70	0.006
Group II	9.10	
Group III	15.70	

Significance value for the three groups above is $p = 0.006$, so $p < 0.05$ and shows that H_0 is rejected and H_a is accepted, which shows that there is a significant influence in the three groups given treatment with the degree of acne vulgaris. After carrying out the Kruskal Wallis test, it is necessary to carry out a Post Hoc LSD test to determine the magnitude of the effect of each treatment. The analysis results from the Post Hoc LSD test are displayed in Table 9.

Table 9. LSD Post Hoc Test Results

Group	Category	N	p
Group I	Group 2	10	0.043
	Group 3	10	0.686
Group II	Group 1	10	0.043

Group	Category	N	p
Group III	Group 3	10	0.097
	Group 1	10	0.686
	Group 2	10	0.097

The table above shows that groups 1 and 2 have a significance value of <0.05 where $p = 0.043$, which indicates that there are significant results after the treatment test. Then the sig values of groups 1 and 3, groups 2 and 3, and group 3 with both 2 and 1 show a $p \text{ value} > 0.05$, which indicates that there is no significant effect after treatment.

After completing the analysis, a gradation value analysis was then carried out to find out which treatment had the most influence in reducing the degree of acne vulgaris lesions. The following are the results of the analysis of the gradation values obtained in Table 10.

Table 10. Distribution Gradation Value of Changes in Degree of Acne Vulgaris Lesions

Group	Average (%)			Decrease (%)		
	T0	T5	T10	T0-T5	T5-T10	T0-T10
G1	43	36	31.8	15.34	12.63	27.79
G2	40.9	29	19.3	27.38	35.01	62.39
G3	42.8	36	29.4	15.18	19.01	34.19

Based on the table above, it can be seen that the gradation value of decreasing the degree of lesions from T0 to T10 was greatest in group 2 with acupuncture treatment twice a week with a combination of tamanu (*Callophyllum inophyllum*) oil every day with a value of 62.39%.

IV. DISCUSSION

Based on table 1, it can be seen that most research subjects were aged 17 years with a total of 13 subjects (43.3%). This is in line with previous research which explains that the highest prevalence of acne vulgaris in women is in the range of 14-17 years with a figure of 83-85% which

is influenced by hormonal factors and the use of cosmetics⁽⁷⁾.

In Table 2 there is a distribution of research subjects regarding the differences in syndromes experienced with the most frequent mode being the hot wind in the lung meridian with a total of 24 female students (80%). Hot wind syndrome in the lung meridian is characterized by the presence of red blackheads, redness on the face, pustules, and lesions that feel itchy and painful when pressed. This condition can occur because the body is not fit and the body is easily invaded by hot winds⁽¹¹⁾.

Based on Table 3, it is known that 100% of research subjects experienced acne vulgaris with 17 (56.7%) medium degrees and 13 female students (43.3%) with mild degrees. After receiving the 10th treatment, it was discovered that there was a decrease in the degree of lesions as indicated by the number of female students experiencing moderate acne vulgaris as many as 6 (20%) and 24 subjects experiencing mild acne vulgaris (80%). The results of the data normality test using Shapiro-Wilk showed that in groups 1 and 3 the significance value was $p < 0.05$ which indicated that the data was not normally distributed and in group 2 the significance value was $p > 0.05$ which meant the data was normally distributed. The homogeneity test with Levene's shows a significance value of $p > 0.05$ so it can be concluded that the data is homogeneously distributed.

The significance value of the Kruskal Wallis test in the three groups is $= 0.006$, which means $p < 0.05$ so H_0 is rejected and H_a is accepted. These results show that in the three groups, there was a significant influence on the degree of acne vulgaris lesions. The results of the Post Hoc LSD follow-up test showed that between group 1 and group 2 as well as between group 2 and group 1 there was a significant influence with a figure of 0.043 ($p < 0.05$).

The gradation value of changes in the degree of acne vulgaris lesions shows

that the highest T0 – T10 is group 2 (acupuncture 2 times /week and tamanu oil every day) at 62.39%, then group 3 (acupuncture and tamanu oil 2x/week) at 34.19 %, and group 1 (acupuncture) was 27.7%. This shows that the group with a combination of acupuncture and tamanu oil (*Callophyllum inophyllum*) was more influential than the acupuncture group. These results are in line with research which states that tamanu oil containing canalolide, calofilolide, and tamanolide for antibacterial against *Propionibacterium acnes* and *Staphylococcus aureus*, both of which are bacteria that play an active role in the formation of acne vulgaris⁽¹²⁾.

Tamanu oil also accelerates wound healing by reducing fibrosis, regenerating skin cells, especially keratinocytes and fibroblast cells, producing glycosaminoglycans and collagen (11,37). Tamanu oil also contains 7% wax and several fats which can be classified as 92% neutral fat, 6.4% glycolipids and 1.6% phospholipids, it will make oil easier to be absorbed into the skin⁽¹⁶⁾.

The acupuncture points used in this study were EX-HN3 Yintang, EX-HN5 Taiyang, GV24 Shenting, and ST4 Dicang in group 1 and local point punctures around acne vulgaris lesions in groups 2 and 3. These punctures are useful for reducing inflammation by accelerating

the migration of leukocyte cells, stimulates the secretion of serotonin, β -endorphin, corticotropin-releasing hormone (CRH), gonadotropin-releasing hormone (GnRH), and insulin which have anti-inflammatory properties⁽¹⁾. Acupuncture also provides a vasodilation effect by producing Peripheral Endogenous Opioids (OEP) which also stimulates Growth Promoting Factor (GPF) (15). The TER (Therapeutic Effective Rate) also increases after acupuncture is assessed by reducing the number and severity of acne vulgaris lesions⁽⁸⁾.

V. CONCLUSION

Local point acupuncture therapy with a combination of tamanu (*Callophyllum inophyllum*) oil has an effect on changing the degree of acne vulgaris lesions in SMAIT Ibnu Abbas Klaten students. The significance value obtained from the Kruskal Wallis test is $p = 0.006$. The results of the Post Hoc LSD follow-up test showed that group 1 and group 2 had a significant effect on changes in the degree of acne vulgaris lesions with a significance value of $p = 0.043$. The gradation value of changes in the degree of acne vulgaris lesions shows that at T0 – T10 the largest is group 2 at 62.39%, then group 3 at 34.19%, and group 1 at 27.79%.

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