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Original Article

In Vitro Antibacterial Activity Of *Myrica javanica* leaf Extract Against *Staphylococcus aureus* And *Propionibacterium acnes*

Aktivitas Antibakteri In Vitro Ekstrak Daun Wuru Ketek Terhadap *Staphylococcus aureus* dan *Propionibacterium acnes*

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Abstract

Based on the Myrica genus, Myrica esculenta contains secondary metabolites such as flavonoids, steroids, tannins, alkaloids, and saponins, that have the potential to act as antibacterial agents. This study aims to evaluate the antibacterial effectiveness of Myrica javanica extract against Staphylococcus aureus and Propionibacterium acnes in vitro. Extraction was performed using the maceration method with 96% ethanol, followed by antibacterial activity testing using the disk diffusion method at five extract concentrations (20%, 40%, 60%, 80%, 100%) with positive control (Clindamycin) and negative control (DMSO). The results showed an increase in the maximum inhibition zone against the bacteria Staphylococcus aureus and Propionibacterium acnes measuring 14,04 ± 0,50 mm and 12,3 ± 0,64 mm respectively at concentration of 100%. In conclusion, the extract of Myrica javanica shows potential antibacterial activity against both test bacteria.

Abstrak

Berdasarkan genus Myrica, Myrica esculenta mengandung metabolit sekunder seperti flavonoid, steroid, tanin, alkaloid, dan saponin, yang berpotensi bertindak sebagai agen antibakteri. Penelitian ini bertujuan untuk mengevaluasi efektivitas antibakteri ekstrak Myrica javanica terhadap Staphylococcus aureus dan Propionibacterium acnes secara in vitro. Ekstraksi dilakukan menggunakan metode maserasi dengan etanol 96%, diikuti dengan pengujian aktivitas antibakteri menggunakan metode difusi cakram pada lima konsentrasi ekstrak (20%, 40%, 60%, 80%, 100%) dengan kontrol positif (Clindamycin) dan kontrol negatif (DMSO). Hasil menunjukkan peningkatan zona inhibisi maksimum terhadap bakteri Staphylococcus aureus dan Propionibacterium acnes masing-masing sebesar 14,04 ± 0,50 mm dan 12,3 ± 0,64 mm pada konsentrasi 100%. Kesimpulannya, ekstrak Myrica javanica menunjukkan potensi aktivitas antibakteri terhadap kedua bakteri uji tersebut.

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INTRODUCTION

Acne vulgaris is a chronic inflammation of the pilosebaceous unit characterized by the appearance of comedones, papules, pustules, nodules, and cysts, especially on the face, back, and chest. Although the exact cause is not yet fully understood, several factors such as stress, hormones, genetics, medications, and bacterial infections such as *Propionibacterium acnes*, *Staphylococcus aureus,* and *Malassezia furfur* are known to play a role in its pathogenesis. The use of antibiotics such as tetracycline, erythromycin, and clindamycin has been the primary choice in acne treatment. However, their long-term use can cause side effects such as irritation, antibiotic resistance, and immune reactions. Therefore, safer alternative therapies are needed, one of which is through the use of natural ingredients.[1,2]

The plant *Myrica javanica*, also known as wuru ketek, is a member of the *Myrica* genus that is believed to have antibacterial activity due to its active compounds such as myricetin and quercetin. It is known that the genus

Myrica, specifically *Myrica cerifera*, exhibits significant antibacterial activity, reducing the inhibition zone for the bacteria *Staphylococcus epidermidis* and *Staphylococcus aureus* to 13 mm and 6 mm, respectively. Meanwhile, *Myrica esculenta* has antibacterial activity against three Gram-positive bacteria *(Staphylococcus aureus*, *Bacillus subtilis*, *Staphylococcus epidermis*) and three Gram-negative bacteria (*Escherichia coli*, *Salmonella enterica*, and *Proteus mirabilis*). The inhibition zones for Gram-positive bacteria, namely *Staphylococcus aureus*, *Bacillus subtilis*, and *Staphylococcus epidermis*, were 16 ± 0.5, 12 ± 0.2, and 18 ± 0.5 mm, while for Gram-negative bacteria, namely *Escherichia coli*, *Salmonella enterica*, and *Proteus mirabilis*, they were 15.5 ± 0.5, 10 ± 0.1, and 12 ± 0.2 mm, respectively.[3,4,5]

However, to date there have been no scientific reports on the antibacterial potential of *Myrica javanica* against acne-causing bacteria. Therefore, this study aims to evaluate the antibacterial activity of *Myrica javanica* ethanol extract against *Staphylococcus aureus* and *Propionibacterium acnes* and to identify its secondary metabolite compounds.

METHODS

This study was an in vitro laboratory experimental study to evaluate the antibacterial activity of wuru ketek plant extract (*Myrica javanica* Reinw. Ex Bl) leaf extract against against *Staphylococcus aureus* and *Propionibacterium acnes* . The experimental groups consisted of a positive control (clindamycin), a negative control dimethyl sulfoxide (DMSO), and a treatment group using various concentrations of *Myrica javanica* leaf extract . This study was conducted from December to April 2025 at the Hermina Health Institute laboratory. Plants samples were determined at the Bandung Institute of Technology School of Life Sciences and Technology.

Tools : Test tube (Pyrex), Test tube rack, Test tube holder, Pasteur Pipet (Pyrex), Micropipette (Dragon lab), Water Bath (Memmert), Analitycal balance (Radwag) , Petri dish (onemed), Beaker glass 500 ml (Pyrex), String rod, Oven (Memmert), Autoklaf, Blender (Tuctac), Forceps, Inkubator (Memmert), Funnel (Pyrex), Vernier caliper , Filter paper, Plastik wrap, Aluminium foil, Spread, Inoculation loop, Beaker 50 ml (Pyrex), Handscoon (onemed), Bunsen, Spatula.

Materials : Leaf Wuru ketek, *Staphylococcus aureus* (Agavilab), *Propionibacterium acnes* (Agavilab), Paper disk Klindamisin, Nutrient agar (Oxoid), Aquadest (PT. Bumi Indah), Ethanol 96% (Sari Kimia), HCl (Merck), Mayer (Nitra Kimia), Bouchardat (Nitra Kimia), Dragendroff (Nitra Kimia), $FeCl_3$ 1% (Merck), H_2SO_4 (Merck), NaoH 10 % (Merck), $BaCl_2 2H_2O$ (Merck), Seng p, Mg, Asam Sulfat Anhidrina (Merck), Asam Asetat (Merck), Iodium, NaOH 1,0 N (Merck).

Research Procedure

Preparation of positive and negative control solutions

A positive control is a treatment that shows an inhibition zone in antibacterial tests against *Staphylococcus aureus* and *Propionibacterium acnes*. This positive control uses clindamycin, a semi-synthetic antibiotic derived from lincomycin, which also works against anaerobic bacteria, gram-positive and gram-negative bacteria. Negative control is a treatment that does not show an inhibition zone in antibacterial studies of *Staphylococcus aureus* and *Propionibacterium acnes*. This negative control uses Dimethyl Sulfoxide (DMSO).[6]

Extract Preparation

The extract was prepared by weighing 100 grams of wuru ketek (*Myrica javanica*) powder. It was then extracted using the maceration method with 1000 ml of 96% ethanol solvent until the entire sample was completely submerged. The mixture was then sealed tightly and left at room temperature for 24 hours. After that, the macerate is filtered using filter paper, and the filtrate obtained is collected. The filter residue is then re-macerated with 3000 ml

of 96% ethanol, carried out three times for 24 hours each until the filtrate produced is almost colourless. All the filtrate obtained is then evaporated using a water bath or oven at a temperature of 60°C until a thick extract is obtained.[7]

Preparation of Extract Concentration Variations

The concentrations of 96% ethanol extract of Wuru ketek used were 20%, 40%, 60%, 80%, and 100%.[8] The preparation was carried out by weighing and diluting the concentrated extract with a solvent. Weigh the sample stock for the highest concentration using a percentage ratio (w/v).[9]

Phytochemical Screening

Alkaloids

0.5 grams of wuru ketek extract was placed in a test tube, then 1 ml of 2N hydrochloric acid (HCl) solution and 9 ml of distilled water were added. The mixture was heated in a water bath for 2 minutes, then cooled and filtered. Three drops of the filtrate were taken and placed on a drop plate or in a test tube. Next, a qualitative alkaloid test was carried out by adding 2 drops of Bouchardat reagent. The formation of a brown to black precipitate indicated the presence of alkaloids. The test was continued by adding 2 drops of Mayer reagent, which produced a white or yellow precipitate, and 2 drops of Dragendorff reagent, which formed an orange precipitate.[10]

Tannin

0.5 grams of wuru ketek extract is placed in a test tube, then 1 ml of 10% iron (III) chloride solution is added. The formation of a dark blue, blackish blue, or greenish colour indicates the presence of tannin compounds.[10]

Flavonoids

0.5 grams of wuru ketek extract was placed in a test tube and dissolved with 1-2 ml of 96% ethanol. Next, 0.5 grams of zinc P powder and 2 ml of 2N hydrochloric acid were added, then left to stand for 1 minute. After that, 10 drops of concentrated hydrochloric acid were added. The formation of an intense red colour within 2-5 minutes indicated the presence of flavonoid compounds.[10]

Saponins

0.5 grams of wuru ketek extract was placed in a test tube, then 10 ml of hot water was added. After the mixture was cooled, the solution was shaken vigorously for 10 seconds. A positive result was indicated by the formation of a 1-10 cm high foam that lasted less than 10 minutes. Furthermore, after the addition of 1 drop of hydrochloric acid, the foam remains stable and does not disappear.[10]

Terpenoids dan steroids

0.5 grams of wuru ketek extract is placed in a test tube. Then, 2 drops each of anhydrous acetic acid and concentrated sulfuric acid are added. The formation of a purple or orange color indicates the presence of triterpenoid compounds, while the formation of a blue or green colour indicates the presence of steroid compounds.[11]

Solvent Residue

Solvent residue is the determination of the content of a specific solvent that remains in the extract, with the aim of ensuring that during the manufacturing process there are no solvent residues that should be removed.[12] Qualitative solvent residue testing is carried out by dissolving the wuru ketek extract in 5-10 ml of distilled water, then adding 1 ml of 1.0 N NaOH. Then slowly add 2 ml of 0.1 N iodine (within 3 minutes), producing an iodoform odor and forming a yellow precipitate within 30 minutes.[13]

Sterilization of equipment

All glassware, such as measuring flasks, reaction flasks, and Erlenmeyer flasks, are cleaned using soap containing antiseptic and then dried. Once dry, the equipment is wrapped in newspaper with the mouth of the container covered with cotton wool. The sterilization process for glass equipment is carried out using an autoclave at a temperature of 121°C with a pressure of 1 atm for 15 minutes. Needle ose sterilization is carried out by burning over a Bunsen burner, while tweezers are sterilized by immersion in 70% alcohol.[14]

In Vitro Analysis

Preparation of Bacterial Growth Medium

Weigh 4.2 grams of Nutrient Agar (NA) medium and place it in an Erlenmeyer flask. Dissolve the medium in 150 ml of distilled water (equivalent to a concentration of 28 g/L) while shaking until homogeneous. Next, the solution was heated using a hot plate for ± 10 minutes until all the media was completely dissolved. After that, the media was sterilized using an autoclave at a temperature of 121°C for 15 minutes. The sterile media was cooled to a temperature of 40-45°C, then poured into Petri dishes until it solidified. This media was used as the base layer and second layer in the test media.

Inoculation of *Staphylococcus aureus* and *Propionibacterium acnes* bacteria

Bacterial isolates were taken using a sterilized inoculating needle, then inoculated on to the surface of the agar medium using the streak method. Next, the medium was incubated at 37°C for 24 hours.[15]

Preparation of Turbidity Standard (Mc Farland 0.5)

The Mc Farland solution is prepared by mixing 9.5 ml of 1% H_2SO_4 solution in a test tube, then adding 0.5 ml of 1% $BaCl_2$ solution. The mixture is shaken until it produces turbid solution. This turbid solution is used as a turbidity standard for comparison with test bacterial suspensions of *Staphylococcus aureus* and *Propionibacterium acnes* .[16]

Preparation of *Staphylococcus aureus* and *Propionibacterium acnes* Test Bacteria Suspensions

The procedure for preparing bacterial suspensions of *Staphylococcus aureus* and *Propionibacterium acnes* is carried out by taking bacterial colonies from pure cultures using a sterilized inoculating needle. The colonies are then placed and suspended in a test tube containing 10 ml of 0.9% physiological NaCl solution until the level of turbidity meets the standard.[17,18]

Antibacterial Activity Test

The antibacterial activity test was conducted on the control group and the treatment group. Whatman No. 1 filter paper was cut into circles with a diameter of 1 cm. Each piece of filter paper was then dripped with DMSO solution as a negative control, clindamycin solution as a positive control, and wuru ketek (*Myrica javanica*) extract as the treatment group. Each treatment was performed in triplicate. The filter paper pieces were placed on the surface of Nutrient Agar (NA) media that had been inoculated with *Staphylococcus aureus* and *Propionibacterium acnes* bacteria. The media was then incubated at 37°C for 24 hours. After the incubation period, the formation of an inhibition zone in the form of a clear area around the filter paper containing the extract was observed.[19,20]

Observation and Measurement of Inhibition Zone

Measurements were taken after incubation at 37°C for 24 hours. The inhibition zone (clear zone) around the paper disk was observed for each extract used. Measure the diameter of the inhibition zone vertically and horizontally.[21]

Data Analysis

Research data in the form of inhibition zone diameter was statistically tested using SPSS software version 25 to obtain the difference value. Normality was tested to ensure that the data was normally distributed. The researcher used the Shapiro Wilks normality test because the sample size was < 50, which indicated that if the data had a p-value > 0.05, the data was normally distributed. A parametric test was performed with a 95% confidence level (a=5%). Another alternative was chosen if the data produced was not normally distributed, then a non-parametric statistical method needed to be used.[22,23]

RESULT AND DISCUSSION

This study aims to evaluate the potential of Wuru ketek (*Myrica javanica* Reinw. Ex Bl) plant extract in inhibiting the growth of *Staphylococcus aureus* and *Proponibacterium acnes* bacteria, Antibacterial activity testing was conducted using the paper disk diffusion method, with the measured parameter being the diameter of the inhibition zone (mm) formed around the disk. The measurement data was then statistically analyzed to determine the effect of extract concentration on the ability to inhibit bacterial growth.

The extraction process of wuru ketek leaves was carried out to obtain the metabolite compounds contained therein. The extraction was carried out using the maceration method, which was chosen because it minimizes damage to thermolabile compounds. The solvent used is 96% ethanol because it is safe, non-toxic, easily obtainable, and has good extraction capabilities and accelerates the evaporation process. The liquid extract obtained is then evaporated in an oven at a 50-60°C to prevent damage to the compounds due to excessive heating. This process produces 16 grams of thick extract.

Phytochemical Screening

The following are the phytochemical test results obtained from concentrated extracts of wuru ketek leaves using 96% ethanol.

Table 1. Results of phytochemical identification of 96% ethanol concentrated extract

Phytochemical Screening	96% ethanol extract yield
Alkaloids	+
Mayer	-
Bourchardat	+
Dragendroff	+
Tannin	+
Saponin	+
Flavonoids	+
Terpenoids	+

Source : The author's findings (2025)

Based on phytochemical test results, 96% ethanol extract of wuru ketek leaves contains alkaloids, tannins, saponins, flavonoids, and terpenoids.

Wuru ketek leaf extract reacted with Mayer's reagent but no colour change to a white precipitate occurred because tetrachloromercuric (II) ions did not respon with the alkaloids and therefore did not form a precipitate. The Bouchardat reagent a changes, forming a blackish-brown precipitate, and with the addition of the Dragendroff reagent, an orange-yellow precipitate is formed, due to the formation of a coordinate covalent bond with K+, which is

a metal ion. This alkaloid has antibacterial properties by disrupting components of the peptidoglycan in bacterial cells, preventing the cell wall from forming completely and causing the death of the cell.[24]

Based on the tannin test, wuru ketek leaf extract was identified as containing tannin compounds. This was indicated by the colour change that occurred after the addition of $FeCl_3$ solution, which reacted with the hydroxyl group in the tannin. The $FeCl_3$ solution hydrolyses tannin groups, producing a blue-black color in hydrolyzed tannins, while condensed tannins produce a green-black colour. Tannin compounds are known to have antibacterial activity through the mechanism of inhibiting reverse transcriptase and DNA topoisomerase enzymes, thereby disrupting the formation and growth of bacterial cells.[24]

Based on saponin testing, it is known that wuru ketek extract contains saponin that forms a 2 cm foam, which does not disappear after the addition of 2N HCl. This is because the addition of 2N HCl to saponin causes an increase in the polarity of the saponin compound, resulting in a change in the position of its groups. In this state, the polar (hydrophilic) group faces outward and the non-polar (hydrophobic) group faces inward, forming a structure or micelle. This state forms foam, which is a sign of the presence of saponin compounds. Saponin compounds act as antibacterials with a mechanism of action that reduces surface tension, which can cause an increase in permeability or leakage in cells.[24]

In the flavonoid test, the wuru ketek extract formed an intense red or orange colour. This is because the addition of Mg powder and concentrated HCl can reduce the benzopyron nucleus found in the flavonoid structure, thereby forming red flavilium salts. Flavonoid compounds also act as antibacterials by forming complex compounds with extracellular proteins, thereby damaging cell membranes.[24]

Testing of terpenoids and steroids in wuru ketek leaf extracts showed positive results for steroids, forming a green colour. This is due to the oxidation of steroid triterpenoid compounds through conjugated double bonds. Triterpenoid compounds act as antibacterials by inhibiting the growth of bacteria associated with lipid membranes and their sensitivity, causing leakage in bacterial liposomes.[25]

Antibacterial Activity Test

According to Davis and Strout (1971), inhibition zone criteria can be classified into four categories. An inhibition zone diameter of <5 mm is considered weak, an inhibition zone of 5-10 mm is considered moderate, an inhibition zone of 10-20 mm is considered strong, and an inhibition zone of > 20 mm is considered very strong.

Table 2. Inhibition zone of 96% ethanol extract of *Myrica javanica* leaves against *Staphylococcus aureus*.

Treatment Groups	Replication			Mean±SD	%KV	Strength
	I	II	III			
20%	1,50 mm	1,50 mm	1,50 mm	1,50 ± 0	0%	Weak
40%	1,50 mm	1,50 mm	1,50 mm	1,50 ± 0	0%	Weak
60%	4,70 mm	4,70 mm	-	4,70 ± 0	0%	Weak
80%	14,13 mm	14,12 mm	13,5 mm	13,91 ± 0,36	2,58%	Strong
100%	14,13 mm	14,50 mm	13,50 mm	14,04 ± 0,50	3,56%	Strong
K+	18,15	14,50 mm	13,50 mm	15,38 ± 2,44	15,86%	Strong
K-	0	0	0	0	0%	-

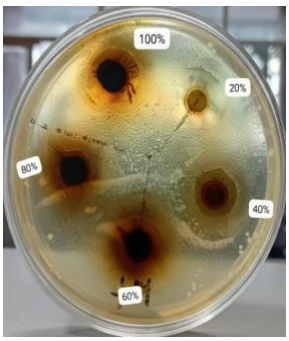


Figure 1. Reflication 1

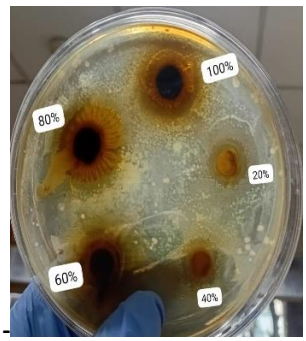


Figure 2. Reflication 2

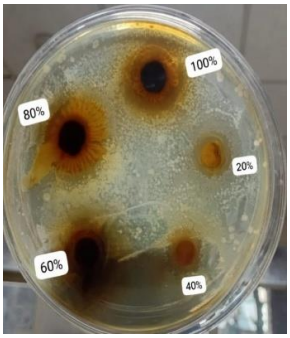


Figure 3. Reflication 3



Figure 5. Positive control

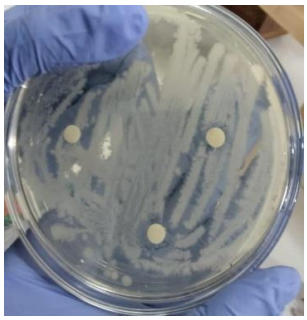


Figure 6. Negative control

Activity Against *Staphylococcus aureus* as presented in Table 2, the extract exhibited a concentration-dependent antibacterial effect against *Staphylococcus aureus*. At lower concentrations (20-60%), the inhibition zones were below 5 mm, indicating weak antibacterial activity. A marked increase in activity was observed at higher concentrations (80-100%), where the inhibition zones were classified as strong (10-20 mm), The positive control (K+) exhibited the largest inhibition zone, whereas the negative control (K-) showed no inhibitory effect. These results indicate that the active compounds present in *Myrica javanica* extract, such as flavonoids and alkaloids, contribute significantly to the inhibition of *Staphylococcus aureus* growth through mechanisms involving bacterial cell wall disruption .

Table 3. Inhibition zone of 96% ethanol extract of *Myrica javanica* leaves against *Propionibacterium acnes*.

Treatment Group	Replication			Mean ±SD	%KV	Strenght
	I	II	III			
20%	-	6.17 mm	4,70 mm	5,43 ± 1,03	18,96%	Currently
40%	8,80 mm	7.50 mm	6,12 mm	7,47 ± 1,34	17,93%	Currently
60%	9,90 mm	7,70 mm	7,9 mm	8,50 ± 1,21	14,23%	Currenly
80%	9,90 mm	9,10 mm	9,90 mm	9,63 ± 0,46	4,47%	Currently
100%	11,90 mm	12,11 mm	13,11 mm	12,3 ± 0,64	5,20%	Strong
K+	17,14 mm	15,14 mm	17,13 mm	16,4 ± 1,15	7,012%	Strong
K-	0	0	0	0	0%	-

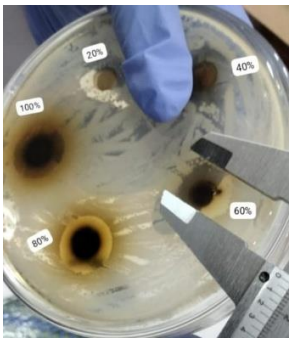


Figure 1. Reflication 1

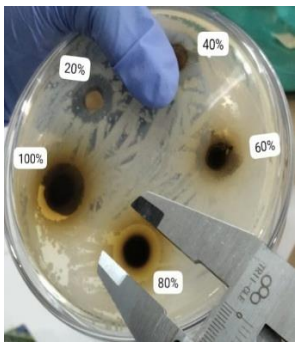


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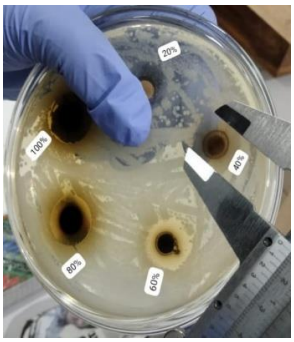


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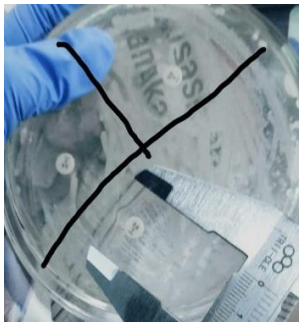


Figure 5. Positive control

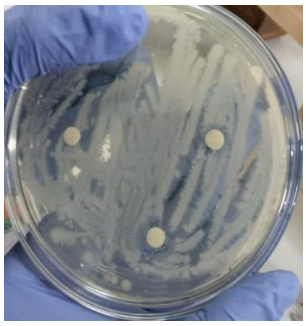


Figure 6. Negative control

The antibacterial activity of the extract against *Propionibacterium acnes* is shown in Table 3. Unlike *Staphylococcus aureus*, *Propionibacterium acnes* exhibited moderate inhibition at lower to intermediate concentrations (20-80%), with inhibition zones ranging from 5-10 mm. At 100% concentration, the extract demonsrated strong antibacterial activity, with a mean inhibition zone exceeding 10 mm. The positive control (K+) exhibited the largest inhibition zone, whereas the negative control (K-) showed no inhibitory effect. These result indicate that the active compounds present in *Myrica javanica* extract, such as saponins and steroids, contribute significantly to the inhibition of *Propionibacterium acnes* growth through mechanisms involving bacterial cell membrane disruption.

Table 4. Results of normality and homogeneity analysis

Extract	Bacteria	Concentration	Normality Test	Homogeneity test
96% ethanol extract of wuru ketek leaves	*Staphylococcus aureus*	20%	-	0,001
		40%	-	
		60%	-	
		80%	0,436	
		100%	0,008	
		K+	0,393	
	Propionibacterium acnes	20%	0,439	0,008
		40%	0,967	
		60%	0,157	
		80%	0,000	
		100%	0,312	

	K +	0,008	

Source: The author's findings (2025)

The results of the normality and homogeneity test presented in Table 4 indicated that the data variances were not normally distributed and not homogeneous ($p < 0,05$). Consequently, non-parametric statistical methods were employed in this study.

Table 5. Results of *Mann-Whitney* analysis of *Staphylococcus aureus* bacteria

	20%	40%	60%	80%	100%	K+	K-
20%	-	0,100	0,046*	0,037*	0,037*	0,037*	0,025*
40%	0,100	-	0,046*	0,037*	0,037*	0,037*	0,025*
60%	0,046*	0,046*	-	0,076	0,076	0,076	0,046-*
80%	0,037*	0,037*	0,076	-	0,500	0,127	0,037*
100%	0,037*	0,037*	0,076	0,500	-	0,275	0,037*
K+	0,037*	0,037*	0,076	0,127	0,275	-	0,037*
K-	0,025*	0,025*	0,046*	0,037*	0,037*	0,037*	-

Table 6. Result of *Mann Whitney* analysis of *Propionibacterium acnes bacteria*

	20%	40%	60%	80%	100%	K+	K-
20%	-	0,127	0,050*	0,046*	0,050*	0,050*	0,121
40%	0,127	-	0,275	0,046*	0,050*	0,050*	0,037*
60%	0,050*	0,275	-	0,246	0,050*	0,050*	0,037*
80%	0,046*	0,046*	0,246	-	0,046*	0,046*	0,034*
100%	0,050*	0,050*	0,050*	0,046*	-	0,050*	0,037*
K+	0,050*	0,050*	0,050*	0,046*	0,050*	-	0,037*
K-	0,121	0,037*	0,037*	0,034*	0,037*	0,037*	-

Description :

*: Indicates a significant difference (*p-value* < 0,05)

Source: The author's findings (2025)

The *Mann-Whitney* test results presented in tables 5 and 6 showed statistically significant differences ($p < 0,05$) between several extract concentrations and the negative control for both tested bacteria, indicating that the extract exhibited antibacterial activity. In addition, significant differences were also observed among extract concentrations, suggesting a concentration-dependent effect on antibacterial activity. An increase in extract concentration generally resulted in larger inhibition zone diameters. However, when compared with the positive control, the inhibition zones produced by the extract were smaller, indicating that the antibacterial potency of the extract is classified as moderate.

Limitation

This study has several limitations. In the extraction using the maceration method, the solvent residu test used a qualitative test. Further research is recommended to use alternative extraction methods, quantitative methods for solvents residue, and other bacterial tests.

CONCLUSION

The 96% ethanol extract of *Myrica javanica* leaf contains various secondary metabolites, including flavonoids, saponins, tannins, steroids, and alkaloids, which are suggested to be associated with its antibacterial activity. The extract demonstrated a concentration-dependent inhibitory effect against *Staphylococcus aureus* and *Propionibacterium acnes*, with the strongest activity observed at the highest concentration tested. Based on inhibition zone classification, the extract exhibits strong antibacterial activity against both bacterial strains.

These findings indicate that *Myrica javanica* leaf extract has potential as a natural antibacterial agent, particularly for such as acne. However, further studies involving quantitative antibacterial assays, mechanistic investigations, and safety evaluation are required to support its therapeutic application.

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AUTHOR CONTRIBUTION STATEMENT

VA: Supervision, writing review, and editing; **YM**: Investigation, data curation, and original draft prepation; **DV**: Data curation and visualization; **GN**: Conceptualization and methodology; **PP**: Investigation and validation.

CONFLICT OF INTEREST DECLARATION

The author declare no conflict of interest.

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