9th National Congress of Indonesian Society for Clinical Microbiology (PAMKI) and
10th National Symposium of Indonesia Antimicrobial Resistance Watch (IARW)
(9th NC PAMKI and 10th NS-IARW) 2015

MANAGEMENT OF INFECTION IN THE ERA OF ANTIMICROBIAL RESISTANCE

Workshop
Thursday, October 29th, 2015

Symposium & Exhibition
Friday-Saturday, October 30th - 31st, 2015

JW Marriott Hotel
Medan
Sumatera Utara, Indonesia
9th National Congress of Indonesian Society for Clinical Microbiology (PAMKI) and 10th National Symposium of Indonesia Antimicrobial Resistance Watch (IARW) (9th NC PAMKI and 10th NS-IARW) 2015

MANAGEMENT OF INFECTION IN THE ERA OF ANTIMICROBIAL RESISTANCE

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“Management of Infection in the era of Antimicrobial Resistance”

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DENAH
ACKNOWLEDGEMENT
PARTICIPANTS & SPEAKERS
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Antibacterial Activity Comparison between the Fraction of Ethyl Acetate, Chloroform, and Methanol of Red Betel Vine (*Piper crocatum*) Leaves Ethanol Extract toward *Salmonella typhi*

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**Background:** *Salmonella typhi* is the cause of typhoid fever disease. This bacteria was reported to have resistance towards antibiotics at several areas in Indonesia. As an effort to overcome this resistance, it is necessary to find a new drug. Rachmawaty (2009) reported that ethanol red betel leaves extract has antibacterial activity towards *Staphylococcus aureus* and *Escherichia coli*. This research aims to compare antibacterial activity of ethanol red betel vine leaves extract fractions to *Salmonella typhi*. Method: The extract was made with maceration method using 70% solvent. It is fractionated with column vacuum chromatography method in sequence with n-hexane, ethyl acetate, chloroform, and methanol solvent. The antibacterial activity is performed by serial dilution method and inoculates in Mac Conkey medium. The tested serial concentration was 50%, 25%, 12.5%, and 6.25%. The antibacterial activity of each fraction was compared and the best fraction was identified using Thin Layer Chromatography and phytochemistry screening. Result: This study found that red betel vine leaves extract fraction with the best antibacterial activity was methanol. It had 25% b/v Minimum Bactericidal Concentration (MBC). The identification result showed that methanol fraction contained saponin and flavonoid. Conclusion: The best antibacterial activity toward *Salmonella typhi* is found in methanol fraction from the ethanol extract of red betel vine leaves. The compounds obtained in the fraction were flavonoid and saponin.

**Keyword:** Red betel vine (*Piper crocatum*), *Salmonella typhi*, methanol fraction
Certificate

This is to certify that

Dr. dr. Farida Juliantina R., M. Kes

has participated as a

POSTER PRESENTER

in the

Management of Infection in the era of Antimicrobial Resistance

held in

Medan - Indonesia
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Anis Karuniawati, MD, PhD, Clin. Microbiologist
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Accredited by The Indonesian Medical Association (IDII)
SKPB 2193/PB/A.4/10/2015
Participant 10 SKP, Speaker 12 SKP, Moderator 4 SKP, Committee 2 SKP
Antibacterial Activity Comparison between the Fraction of Ethyl Acetate, Chloroform, and Methanol of Red Betel Vine (Piper crocatum) Leaves Ethanol Extract toward Salmonella typhi

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Background: Salmonella typhi is the cause of typhoid fever disease. Bacteria were reported to have resistance towards antibiotics at several areas in Indonesia (Suswati & Juniarl, 2009). As an effort to overcome this resistance, it is necessary to find a new drug. Rachmawaty (2009) reported that ethanol red betel leaves extract has antibacterial activity towards Staphylococcus aureus and Escherichia coli.

Objective research: To compare antibacterial activity of ethanethiol red betel vine leaves extract fractions to Salmonella typhi and to identify the type of compound contained in the most active fraction.

Method: The extract was made with maceration method using 70% ethanol solvent. It is fractionated with column vacuum chromatography method in sequence with n-hexane, ethyl acetate, chloroform, and methanol solvent for mobile phase. The stationary phase is silica gel 60 GF254 powder.

The antibacterial activity is performed by serial dilution method and inoculates in Mac Conkey medium. The tested serial concentration was 25%, 50%, 12.5%, and 6.25%. The antibacterial activity of each fraction was compared and the best fraction was identified using Thin Layer Chromatography and phytochemistry screening.

Research findings showed that active compound was methanol fraction, and then the fraction was used to identify compounds of the compound. The identification result showed that methanol fraction contained saponin and flavonoid (Table 2). Flavonoid and saponin have antibacterial activity (Soetan et al, 2006; Shohail et al, 2011).

Conclusions: The best antibacterial activity toward Salmonella typhi is found in methanol fraction from the ethanol extract of red betel vine leaves. The compounds obtained in the fraction were flavonoid and saponin.

Table 1. Result of Inoculation on Mac Conkey Agar Medium

<table>
<thead>
<tr>
<th>No</th>
<th>Concentration</th>
<th>Chloroform Fraction</th>
<th>Ethyl Acetate Fraction</th>
<th>Methanol Fraction</th>
<th>Ethanethiol Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50%</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
</tr>
<tr>
<td>2</td>
<td>25%</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
</tr>
<tr>
<td>3</td>
<td>12.5%</td>
<td>-</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
</tr>
<tr>
<td>4</td>
<td>6.25%</td>
<td>-</td>
<td>R1</td>
<td>R1</td>
<td>R1</td>
</tr>
<tr>
<td>5</td>
<td>Fraction control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Media control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Antibiotic control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Saponin control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Bacteria control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: (1) Bacteria did not grow; (2) Bacteria grow.

Table 2. Identification result of group compound of methanol fraction

<table>
<thead>
<tr>
<th>No</th>
<th>Value</th>
<th>Before as spray</th>
<th>After sprayed</th>
<th>Compound group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.51%</td>
<td>yellowish green</td>
<td>-</td>
<td>flavonoid</td>
</tr>
<tr>
<td>2</td>
<td>0.6%</td>
<td>yellowish green</td>
<td>-</td>
<td>flavonoid</td>
</tr>
<tr>
<td>3</td>
<td>0.5%</td>
<td>yellowish green</td>
<td>-</td>
<td>flavonoid</td>
</tr>
</tbody>
</table>

References: