Potency ratio of fermentation filtrate of yellow passion
(Passiflora edulis var. Flavicarpa) fruit pulp
to antibiotics standard against Staphylococcus aureus,
Escherichia coli and Bacillus subtilis.

Aprileta Nurelli Dwiana1,2, Ida Kusumawati3, Ni Made Mertaniasih4, Ilu Hanifah Nurrosyidah1,5, Isnaeni1*
1 Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Airlangga, Surabaya, Indonesia.
2 Master Student of Study Program of Magister Sciences, Faculty of Pharmacy, University of Airlangga, Surabaya, Indonesia.
3 Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, University of Airlangga, Surabaya, Indonesia.
4 Department of Medical Microbiology, Faculty of Medicine, University of Airlangga, Surabaya, Indonesia.
5 Doctoral Student of Study Program of Magister Sciences, Faculty of Pharmacy, University of Airlangga. Surabaya, Indonesia.
*email: isna.yudi@gmail.com

Introduction

Yellow passion (Passiflora edulis var. Flavicarpa) fruit is the fruit of a local plant that grows abundantly in Indonesia with various health benefits. The active ingredients in the pulp have been reported, including lactic acid bacteria and probiotics, which are known to have advantages, especially as antimicrobials. This study will evaluate the potential ratio of the filtrate resulting from fermentation of passion fruit pulp in De Man Rogosa and Sharpe (MRS) media to the standard of kanamycin and streptomycin against Staphylococcus aureus, Escherichia coli and Bacillus subtilis.

Method

Fresh passion fruit weighed as much as 5 grams of pulp, fermented in the MRS medium for 24 hours at 37°C in an shaker incubator. The fermentation broth was filtered and the filtrate was tested for its inhibitory activity against S. aureus, E. coli, and B. subtilis using agar diffusion method on nutrient agar test media. The potency ratio to kanamycin and streptomycin standards was calculated using a 3x3 random block design.

Result

The inhibitory ratio of the fermentation filtrate varied depending on the tested microbes and the standard of antibiotics. The growth inhibitory activity of the fermentation filtrate at a concentration of 100%/250 µL against S. aureus, E. coli and B. subtilis were equivalent to kanamycin and streptomycin above their MIC and categorized as strong potency.

Conclusion

The potential ratio of filtrate from fermented yellow passion fruit to Kanamycin and Streptomycin in the concentration range of 25-60 ppm and 6-10 ppm, respectively 114.53% and 96.49%; 97.82% and 101.44%; 91.52% and 106.31% for Staphylococcus aureus,
Escherichia coli and Bacillus subtilis.

Table 1. Growth inhibitory zone diameter

<table>
<thead>
<tr>
<th>Petri</th>
<th>Inhibition zone diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dishes</td>
<td>S1</td>
</tr>
<tr>
<td>1</td>
<td>132.3</td>
</tr>
<tr>
<td>2</td>
<td>127.7</td>
</tr>
<tr>
<td>3</td>
<td>132.7</td>
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</tbody>
</table>

Figure 1. Linear regression of Kanamycin

Figure 2. Escherichia coli

Figure 3. Bacillus subtilis

Reference