Antimicrobial activity of Medicinal Plant Extracts against

Streptococcus mutans

Jin-seong Eum* · Young-doo Park
Mokwon University
jseum@mokwon.ac.kr

ABSTRACT

This study was carried out to research antimicrobial agents from medicinal plants, Lonicera japonica, Pinellia ternata, Dictamnus albus, Cryptotympana pustulata, Pinus densiflora, Bupleurum falcatum, Forsythia saxatilis, Castanea crenata, Hovenia dulcis, Prunus sargentii. The ethanol extracts of 10 medicinal plants were tested for the antimicrobial activity against Streptococcus mutans. The extracts of Pinus densiflora showed significant antimicrobial activity against Streptococcus mutans. These results suggested that the extract from Pinus densiflora could be a candidate for new antimicrobial agents against Streptococcus mutans.

I. Introduction

Streptococci is known to be potent in creating dental caries. Among the several species of Streptococci, Streptococcus mutans is the most predominant strains in human dental caries. Streptococcus mutans can adhere to the tooth surface and produce water insoluble glucans from sucrose, which enable Streptococcus mutans to colonize the tooth surface.

Antimicrobial activities of 10 medicinal plant extracts, which were prepared from Lonicera japonica, Pinellia ternata, Dictamnus albus, Cryptotympana pustulata, Pinus densiflora, Bupleurum falcatum, Forsythia saxatilis, Castanea crenata, Hovenia dulcis, Prunus sargentii, were evaluated against Streptococcus mutans. The extract of Pinus densiflora showed significant antimicrobial activity against Streptococcus mutans.

II. METHODS

Medicinal Plant 25g / 500ml 70% Ethanol

↓

Boil with Heating Mental for 3 Hour

↓

Cooling & Filtration

↓

Concentrate with Evaporator

↓

Dry with Freeze Dryer

↓

Weight & Dissolve with Dimethyl sulfoxide

↓

Disk Diffusion Method
III. RESULTS

Table 1. Antimicrobial activity of medicinal plant extracts against *Streptococcus mutans*.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Medicinal Part</th>
<th>Ethanol Extract (200 μg/disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Lonicera japonica</em></td>
<td>Flower</td>
<td>-</td>
</tr>
<tr>
<td><em>Pinellia ternata</em></td>
<td>Tuberous Root</td>
<td>-</td>
</tr>
<tr>
<td><em>Dictamnus albus</em></td>
<td>Root Bark</td>
<td>-</td>
</tr>
<tr>
<td><em>Crypotympana pustulata</em></td>
<td>Slough</td>
<td>-</td>
</tr>
<tr>
<td><em>Pinus densiflora</em></td>
<td>Node of Branch</td>
<td>++</td>
</tr>
<tr>
<td><em>Bupleurum falcatum</em></td>
<td>Root</td>
<td>-</td>
</tr>
<tr>
<td><em>Forsythia saxatilis</em></td>
<td>Fruit</td>
<td>-</td>
</tr>
<tr>
<td><em>Castanea crenata</em></td>
<td>Pericarp</td>
<td>-</td>
</tr>
<tr>
<td><em>Hovenia dulcis</em></td>
<td>Seed</td>
<td>-</td>
</tr>
<tr>
<td><em>Prunus sargentii</em></td>
<td>Bark</td>
<td>-</td>
</tr>
</tbody>
</table>

The antimicrobial activity was represented as follows: •: no inhibitory effect, *, 8.1-10.0mm; **, 10.1-12.0mm; ***, 12.1-15.0mm; ****, over 16.0mm

Figure 1. Assay of antimicrobial activity by different medicinal plant extracts. 1: *Lonicera japonica*, 2: *Pinellia ternata*, 3: *Dictamnus albus*, 4: *Crypotympana pustulata*, 5: *Pinus densiflora*

VI. CONCLUSIONS

1. The ethanol extracts of 10 medicinal plants were tested for the antimicrobial activity against *Streptococcus mutans*.
2. The extracts of *Pinus densiflora* showed significant antimicrobial activity against *Streptococcus mutans*.
3. The extracts from *Pinus densiflora* could be a candidate for new antimicrobial agents against *Streptococcus mutans*.