OCIMUM AMERICANUM L. ESSENTIAL OIL EXHIBITS
ANTIMICROBIAL ACTIVITY AGAINST ORAL BACTERIA RELATED
TO PERIODONTAL DISEASE

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Ocimum americanum L. or hoary basil is an annual
herbaceous plant native to Asia and Africa which has
attracted increased interest due to its antimicrobial
activity against a wide range of pathogenic microor-
ganisms. To evaluate the antimicrobial property of es-
sential oil extracted from the leaves of Ocimum ameri-
canum against oral bacteria related to periodontal dis-
ease. Three species of periodontal pathogens including Porphyromonas gingivalis W50, Prevotella interme-
dia ATCC 25611 and Fusobacterium nucleatum ATCC
25586 were included in the study. Agar diffusion was
performed initially to screen the antimicrobial activity
of Ocimum americanum essential oil. Minimum inhibi-
tory concentration (MIC) and Minimum bactericidal
concentration (MBC) were then determined using the
Millipore membrane method. In the agar diffusion,
essential oil extracted from Ocimum americanum ex-
hibited antimicrobial activity against all test bacteria
with the zone of inhibition ranging from 24 to 30 mm.
The MIC values against P. gingivalis and P. interme-
dia were 0.35 mg/mL whereas that of F. nucleatum
was 0.70 mg/mL. The MBC values against P. gingivalis
and P. intermedia were 0.70 mg/mL whereas that of F.
nucleatum was 1.4 mg/mL. Ocimum americanum es-
sential oil has an antimicrobial activity which may be
a beneficial component of oral health care products
to control or prevent periodontal disease by reducing
these bacteria in the oral cavity.

BREEDING AND SELECTION OF HIGH QUALITY PLANTS
OF RHODIOLA ROSEA

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The composition and content of chemical com-
pounds are one of the most important factors when
breeding medicinal plants. The chemical composition in
R. rosea is mainly influenced by genetic factors but also
factors like temperature and day length strongly affects
the content of compounds. Furthermore, clonal differ-
ences may exist in response to growth conditions and
affect the concentration of metabolites. Five Norwegian
clones of R. rosea, two male and three female clones,
from a clone collection was selected on the basis of the
content of the marker compounds, total Rosavins and
Salidrosid. The seeds from each of the female clones
were collected and seed propagated plants from these
three were planted at six different locations in Norway.
After four seasons the plants were analysed for content
of secondary metabolites.

<table>
<thead>
<tr>
<th>Location</th>
<th>Content of Tot. Rosavines (% of Dry matter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clone</td>
<td>64’11’</td>
</tr>
<tr>
<td>1</td>
<td>6,831</td>
</tr>
<tr>
<td>2</td>
<td>7,064</td>
</tr>
<tr>
<td>3</td>
<td>7,381</td>
</tr>
<tr>
<td>Mean</td>
<td>7,09</td>
</tr>
</tbody>
</table>

The results indicate that the content of secondary
metabolites varies with location and also the individual
clones’s response to location varies (table below). Ger-
mlasm collections with accessions that are selected
based on their chemical composition are therefore
highly valuable. They may carry genes that can be used
to improve the current R. rosea clones and introduction
of new germplasm could further enhance the successful
development of improved R. rosea genotypes. Hence,
crossing between clones with identified content of valu-
able compounds is one way of achieving high quality
genotypes.