Antibacterial activity of honey against *Pseudomonas aeruginosa*

Resistance to antimicrobial therapy is more prevalent among *Pseudomonas* spp. Indiscriminate usage of antibiotics has led to the emergence of drug resistant strains, which have a significant impact on patient’s morbidity and mortality. Honey has long been known to have antibacterial properties and has a long established usage in wound dressing. Clinical reports on the use of honey as an antiseptic have given little or no regard to the type of honey used. The antibacterial activity of different batches of honey can vary by a factor of up to 100. Honey is produced from many floral sources and its antimicrobial activity varies markedly with origin and processing. The variation can be in the amount of hydrogen peroxide produced enzymatically in different types of honey and in the presence of additional antibacterial components derived from the nectar source.

The present study was undertaken to determine the antibacterial activity of honey against clinical isolates of *Pseudomonas aeruginosa*.

A commercial preparation of honey (Agmark, from Khadikraft, India) available in the local market was procured. We tested 50 strains of *Pseudomonas aeruginosa* of which, 30 isolates were from chronic suppurative otitis media (CSOM) patients, 12 isolates were from diabetic foot ulcers and eight isolates were from burn wound infections. *Pseudomonas aeruginosa* ATCC 27853 was also included. The minimum inhibitory concentration (MIC) of honey was determined by agar dilution method. Dilutions were prepared by mixing honey with sterile nutrient agar to get different concentrations ranging between 5 and 15% (vol/vol). A plate of nutrient agar without honey served as control. A plate of nutrient agar with 5% honey was also included to check the sterility of honey and the media used in the test. MIC of dettol was also compared under similar conditions. Clinical isolates of *Pseudomonas aeruginosa* were grown in nutrient broth at 37°C for 4 h, the turbidity was adjusted to 0.5 Mc Farland’s standard and 10 ml of culture was spot inoculated on the surface of the medium. The plates were incubated at 37°C for 24 h and observed for growth. MIC was recorded as the lowest concentration of honey that prevented growth of the test isolates. All the isolates grew at concentration of 5–10% honey, but were inhibited at concentration of 11% and higher [Table 1]. Hence MIC of the honey tested was found to be 11%. All the isolates showed same pattern of sensitivity to the honey tested. MIC of dettol tested in a similar way was found to be 15% for all the isolates of *P. aeruginosa*.

Since *Pseudomonas* are recalcitrant to antibiotic therapy the ability of honey to inhibit test isolates irrespective of their sensitivity pattern has important clinical implications.

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**References**


**Table 1**

Minimum inhibitory concentration of honey and dettol against *P. aeruginosa*

<table>
<thead>
<tr>
<th>Source of the isolates</th>
<th>No. of isolates tested</th>
<th>MIC of dettol</th>
<th>MIC of honey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic suppurative otitis media (CSOM)</td>
<td>30</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>Diabetic foot ulcers</td>
<td>12</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>Burn wounds</td>
<td>8</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>ATCC 27853</td>
<td>1</td>
<td>15%</td>
<td>11%</td>
</tr>
</tbody>
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