The effects of traditional endodontic irrigants on the ability of Candida albicans and Enterococcus faecalis biofilms to induce Toll-like receptor activation on THP-1 monocytes: a pilot in vitro study

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Introduction

This study aimed to test the effects of traditional endodontic irrigants on the ability of Candida albicans and Enterococcus faecalis biofilms to stimulate the innate immune response of monocytes.

Materials and Methods

THP1-XBlue cells (InvivoGen®) release secreted embryonic alkaline phosphatase (SEAP) following Toll-like receptor (TLR) stimulation and activation of nuclear factor kappa B and AP-1 pathways. Enzymatic substrate conversion was quantified in a spectrophotometer.

Conclusions

Within the limitations of this in vitro study, C. albicans was not immunostimulatory. E. faecalis effects on TLR activation were nullified when the bacteria were treated with sodium hypochlorite or chlorhexidine or combined with C. albicans.

Results

1. Monocyte stimulation by different microorganisms at different multiplicities of infection (MOI)
2. Monocyte stimulation by sodium hypochlorite- (NaOCl) and chlorhexidine-treated (CHX) planktonic E. faecalis and C. albicans
3. Monocyte stimulation by NaOCl- and CHX-treated biofilms of E. faecalis and C. albicans

1. Spearman’s rank correlation
2. Spearman’s rank correlation
3. Spearman’s rank correlation

*P<0.001
#P<0.01
* Positive controls Fusobacterium nucleatum and Listeria monocytogenes
* Negative control Streptococcus oralis

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<thead>
<tr>
<th>SEAP</th>
<th>TNF-α</th>
<th>LDH</th>
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<tr>
<td>MOI</td>
<td>0.615*</td>
<td>0.640*</td>
</tr>
<tr>
<td>SEAP</td>
<td>0.920*</td>
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