1796 Inhibitory Effect of Lysozyme and Antifungals against Candida albicans biofilms

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Although it is known that lysozyme (Lz) in human saliva inhibits the growth of planktonic candidal growth the combined effects of Lz and common antifungals on *Candida albicans* (Ca) biofilms has not been investigated. Objectives: The purpose of this study was to evaluate i) time-and dose dependent effect of Lz and, ii) the variable sensitivity of 100µg/ml Lz combined with varying concentrations of amphotericin B (AmB) or 5-fluorocytosine (5FC) on 2-day old Ca biofilms on denture acrylic. Methods: The rotating-disk biofilm reactor system was used to develop standardized Ca biofilms on denture acrylic discs in YNB/100mM glucose medium incubated at 37◦ C and the dose and time dependent inhibition of Ca biofilm metabolic activity with Lz, and Lz in combination with varying concentrations of AmB or 5FC was monitored using the tetrazolium (XTT) reduction assay. Results: 1) A highly significant ($p<0.001$) reduction in metabolic activity was seen for Ca biofilms treated with 100µg/ml Lz during the first hour and plateauing thereafter upto 48 hours, at 37◦ C, 2) With increasing concentrations of Lz (60-240µg/ml) a highly significant ($p<0.001$), dose dependent, reduction in biofilm metabolic activity (28.19 – 69.62%) was observed, 3) AmB(×6MIC) in combination with 100µg/ml Lz exhibited a significant ($p<0.05$) inhibition of biofilm metabolic activity which increased with higher concentrations of AmB (×12MIC – ×24MIC), 4) 5FC (×6MIC – ×24MIC) in combination with 100µg/ml LZ exhibited a highly significant reduction ($p < 0.001$) in biofilm activity compared with the controls. Conclusion: Thus the non-specific antimicrobial salivary protein, Lz may be beneficial in inhibiting Ca biofilms and in addition to synergizing the activity of antifungal agents in the oral milieu. Supported by the Research Grants Council and the Committee of Research and Conference grants (Grant No/ 10204061) University of Hong Kong, Hong Kong SAR.

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