Effect of P. betle on Cell-Surface Hydrophobicity of Oral Candida.


Introduction: Cell surface hydrophobicity (CSH) is a key attribute of virulence among infectious microorganisms. An understanding of this property would help to explain the high colonisation affinity of Candida on denture materials.

Objectives: To determine the CSH of seven strains of oral Candida. The influence of aqueous P. betle extract on the CSH was also assessed.

Methods: Seven Candida ATCC strains were used and hexadecane represented the hydrophobic compound in the experiment. Following rigorous agitation of each candidal suspension with hexadecane, the optical absorbance (OD) of each suspension was read. The percentage of adsorption of each strain to hexadecane was then calculated. To assess the effect of P. betle extract on the CSH, the Candida cells were first treated with extract at concentrations of 0-15 mg/ml. 0.12% w/v chlorhexidine (CHX)-containing mouthrinse and sterile distilled water were used as positive and negative controls, respectively.

Results: C. krusei, C. parapsilosis and C. tropicalis showed the highest adsorption capacity to hexadecane of about 40% while the others were within the range of 12-17%. The CSH of all Candida strains were significantly reduced following treatment with the extract (p<0.05). At 2 mg/ml, P. betle was able to reduce the CSH of C. lusitaniae (94.09%), C. parapsilosis (91.60%), C. albicans (78.16%), C. dubliniensis (73.33%), C. krusei (35.66%), C. tropicalis (32.36%) and C. glabrata (24.43%).

Conclusion: The aqueous extract of P. betle tended to reduce the hydrophobic cell-surfaces of all the Candida tested. This suggested its potential to be used in candidal control especially for denture wearers.