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<th>Role of denture pellicles in Candida albicans biofilm development in vitro</th>
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Effect of Some Antihistamine Drugs on Adherence of Candida albicans.

S. KANCHANAKOM, W. BUJJEER, R. SURATI, and B. THAWEEBOON (Pharmacy Faculty, Burapha University, Thailand).

The aim of this study was to compare the effect of 4 antihistamine drugs: miconazole, furaconazole, ketokonazole, and clotrimazole on adherence of Candida albicans to human buccal epithelial cells (BECs). Epithelial cells were collected from the buccal mucosa of normal healthy subjects. A direct adherence assay was used to determine the percentage of BEC infected by C. albicans. Preincubation of BECs with 10 μM histamine phosphate buffered saline (PBS) and resuspended at 2 x 10⁴ cells/μl were mixed and incubated with drugs at minimum inhibitory concentrations on a shaker at 100 rpm at 37 °C for 1 h. The number of adherent cells was performed by counting the adherent cells on a hemocytometer. No significant differences were found in the effect of 4 antihistamine drugs on BEC with histamine phosphate buffered saline and PBS and PBS with PBS after unattached yeast. The washed BECs were air-dried and Gram-stained. The number of yeast attached to 50 BECs was counted. All results were statistically analyzed by using ANOVA and the results showed that all drugs: miconazole, furaconazole, ketokonazole, and clotrimazole significantly reduced (P<0.01) the adherence of C. albicans to BEC (by more than 50%). Overall, preincubation of BECs with drugs or yeast with yeast gave greater inhibition of adherence than direct mixing, and no significant differences were found between different drugs. However, with direct addition of drugs to the mixture of BECs and C. albicans, some differences in drug efficacies were observed, possibly due to a time requirement in the interaction of drug to cell. In conclusion, incubation drugs decrease the adherence of C. albicans to buccal epithelial cells with the effectiveness of miconazole, furaconazole, ketokonazole and clotrimazole being similar.

Role of dentin caries in Candida albicans biofilm development in vivo.


There is little data on the long term activity of Candida albicans biofilm on mucin in the oral cavity and the process of its establishment in the oral cavity. The present study was designed to evaluate the role of dentin caries in Candida albicans biofilm formation. Three different dental plaque samples were obtained from subjects with active caries lesions (Group A, n=8), with active caries lesions and no biofilm formation (Group B, n=8), and without any caries or biofilm formation (Group C, n=8). The biofilm samples were fixed, sectioned, and stained with hematoxylin and eosin. The presence of C. albicans in the plaque samples was determined by immunohistochemistry. The results showed that the presence of C. albicans was significantly higher in Group A compared to Groups B and C. These findings suggest that the presence of dentin caries may play a role in the establishment of Candida albicans biofilm in the oral cavity.

Antifungal activity of lactoferrin and lysozyme against Candida species. Y.H. SAMARANYAKE, P.W.M. NAKASU AND L.P. SAMARANYAKE.

Lactoferrin and lysozyme are non-immune defence factors present in polymorphonuclear leukocytes and various mucous secretions including saliva. Previous studies have shown that both proteins either singly, or in combination are bactericidal in nature and their combined activity is synergistic. Few workers, however, have studied these interactions with Candida species and therefore evaluated the susceptibility of 20 oral isolates of C. albicans to 5 isolates of C. albicans to lactoferrin and lysozyme; the combined activity of the two proteins was assessed against one isolate from each species. To determine the susceptibility of C. albicans to lactoferrin and lysozyme, 100 μg of lactoferrin and 100 μg of lysozyme were mixed and incubated at 37°C for 30 minutes. The viable yeast cells were assessed by counting 50 μl of suspension on Sabouraud agar, incubating at 37°C and quantifying the resultant growth (CFU). The two Candida species exhibited significant interspecies differences in their sensitivity to lactoferrin and lysozyme, but not for lysozyme. The results indicated that the lactoferrin and lysozyme may act variably on Candida species and modulate the oral carriage of yeasts in a very complex manner.

Humoral immune responses in Candida-associated denture stomatitis. D.H. FELIX, V. BISSELL, and D. WAAY.

(Department of Oral Medicine, Dental Hospital, University of Michigan, Ann Arbor, MI, USA).

Previous studies have demonstrated an increased incidence of Candida carriage and infection among cigarette smokers when compared to non-smokers. However, the mechanisms underlying this difference remain unclear. The aim of the present study was to investigate the effects of cigarette smoking on oral candida colonization. Ninety-three patients (42 smokers, 51 non-smokers) were investigated. Samples of saliva and whole saliva were obtained before the start of treatment and at one, four, and twelve weeks thereafter. Total salivary and saliva Candida counts were determined. The results of the oral candida infection and the effects of smoking on Candida counts were determined. The results showed that smoking had a significant effect on the reduction of Candida counts in the saliva and whole saliva samples. The findings of this study suggest that smoking may be a risk factor for oral candida colonization and infection.

A Model to Study Relationships between Candida albicans and Oral Bacteria. J.M. BARGON and C.W. VAN VYK (University of Stellenbosch, South Africa).

A breakdown of the microbial biofilm in the oral cavity may lead to the proliferation of oral bacteria and the growth of C. albicans. This study aimed to develop a model to study the interactions between C. albicans and oral bacteria and to identify factors that promote or inhibit the growth of C. albicans and oral bacteria. The model consists of a biofilm reactor with a dynamic flow system that simulates the oral cavity environment. The reactor is equipped with a continuous flow system that allows for the continuous addition of substrates and the continuous removal of products. The reactors were inoculated with a mixture of C. albicans and oral bacteria, and the pH, oxygen concentration, and temperature were monitored. The results showed that the growth of C. albicans was inhibited in the presence of oral bacteria, and the growth of oral bacteria was enhanced in the presence of C. albicans. The model is useful for studying the interactions between C. albicans and oral bacteria and for identifying factors that promote or inhibit the growth of these organisms.


The reproducibility of function measurements is important for accurate clinical evaluation. The present study aimed to evaluate the reproducibility and validity of function measurements using a pressure-calibrated probe. The probe was calibrated according to the manufacturer's instructions and tested on a number of different samples to ensure its accuracy. The results showed that the pressure measurements were highly reproducible and accurate. The probe is useful for clinical evaluation of the function of the TMJ and can be used to assess the degree of function impairment.

Pocket depth is an important clinical aspect in the diagnosis of periodontitis. The degree of accuracy is essential in diagnosing periodontal disease. Electronic periodontal probes are expected to give more specific and reproducible values because there is no influence of the examiner. In the present in vivo study the results of the manual (B&F-syntec) and electronic (Peri-Probe, Vodopaj) probing should be compared. 30 adults with periodontal disease took part in the study. The measurements were carried out on six sites of each tooth manually and then with the electronic probe. The same procedure was done twice after four weeks and the results were compared. The differences between the sites of the patients and similar pocket depth values were evaluated using the program EXCEL 6.0. The mean pocket depth gained by manual measurement was 2.9 mm ± 1.2 mm and a reproducibility of 0.5 mm ± 0.3 mm. The mean pocket depth gained by electronic measurement was 2.4 mm ± 1.3 mm and the reproducibility 0.1 mm. They varied for the incisors: 2.4 mm ± 1.0 mm and for the molars 3.5 mm ± 1.5 mm measuring manually. Electronically the incisors showed mean values of 1.9 mm ± 1.1 mm and the molars 2.8 mm ± 1.6 mm. The differences between manual and electronic measurement were statistically significant. The results obtained statistically were in general 0.5 mm lower. The differences turned out to be the same regarding deeper pockets. Conclusion, the results of the study indicate that both probes can be considered in clinical evaluation, but the electronic probe has no disadvantage.

Clinical comparison between a manual and an electronic periodontal probe. S. PHAMGATE, I. NERGIS, U. PLATZER (University of Hamburg, Faculty of Dentistry, Department of Operative Dentistry and Periodontology, Hamburg, Germany).

A 1-Year Periodontal Examination Using CTPIB in Young Females. T. TAKAYAMA, M. HIJIMA, S. HIROUCHI (Tokyo University of Agriculture and Technology, Tokyo, Japan).

Periodical conditions of the female subjects were examined at a high school for 11 years, using the CTPIB probes. Examination were carried out on 6 index teeth (11, 16, 21, 31, 41, and 46) by dentists in our department who underwent the training on the criteria of WHO in advance. The total number of subjects examined was 15,003. The sum of the CTPIB code in each subject of a subject was named as the T-value. Subjects were classified into 3 groups according to the T-value, i.e. the slight group (0 ≤ T-value ≤ 6), the moderate group (7 ≤ T-value ≤ 12), and the severe group (13 ≤ T-value ≤ 34). The prevalence rates were expressed by the T-value. The subjects group was divided into severe group as severe cases. In the year examination, the number of subjects in the slight and the severe groups decreased to approximately 50% and the moderate group increased approximately 3 times of the first year level. The number of subjects having Code 0 and Code 3 decreased approximately a half of the initial level. Decrease in Code 1 was also observed. With the periodontal care had 2 less or 4 more. Dramatic decrease of the severe group and the number of subjects having Code 3 and Code 4 was observed about our recall system. In conclusion, the subjects having calculation and slight gingival inflammation occupied a large part of this teenage population. Severing and taking care of the subjects subject from severe periodontitis at the early stage is effective to prevent the progress of the diseases.