17 Minimum Inhibitory Concentration of Antibacterial Agents Against Cariogenic Organisms. M.G. BOTHELO*†, Prince Philip Dental Hospital, Hong Kong

A total of 38 oral bacteria: streptococci (15), lactobacilli (13) and actinomyces (10), were tested against eight antibacterial agents for their minimum inhibitory concentration (MIC). Antibacterial agents tested were: chlorhexidine diacetate, chlorhexidine dihydrochloride, chlorhexidine gluconate, benzalkonium chloride, cetrimide, cerylpyridinium chloride, thymol and sodium hypochlorite. These were used in suspensions. Serial dilutions of the antibacterial agents were applied to 96 well microtitre plates in concentrations from 64 μg/ml to 0.125 μg/ml with d-glucose as the base medium to yield a final volume of 100 μl per well. An inoculum of the test organism equivalent to 9 X 10^4 colony forming units was dispensed into each test well. Each bacteria was tested on three separate occasions. The actinomyces and lactobacilli were incubated anaerobically and the streptococci for 48 hours at 37°C. Afterwards, the lowest concentration at which no visible growth occurred was recorded to be the MIC. Thymol and sodium hypochlorite did not show any antibacterial activity at the concentrations tested. The MIC range for all the microorganisms was 2.4mm to 20-34 mm.

In order to determine caries progression in permanent first and second molars, dental status was assessed according to WHO criteria (1960) and followed up for 2 years (1994 - 1996) at 152 primary school children aged 10-14 years. The occlusal surface was the most affected.

19 Incisive Caries in Brazilian Schoolchildren Enrolled in Different Fluoride Preventive Programmes. M.B. SOUZA, M.I. BARBOSA, M.M. MARCENES. Faculty of Dentistry from Piracicaba - Sao Paulo, Brazil.

The aim of this 2 year retrospective cohort study was to assess if there were differences in active and inactive white spot lesions in the first molars of 8-9-year-old consuming fluoridated toothpaste and optimally fluoridated water and using fluoride mouthwashes with fluoride mouthrinses combined with fluoridated gel applications. Group 1 (n=220) was selected from schools using mouthwashes with 10 mg/ml fluoride, Group 2 (n=220) from schools using fluoride gel (APF 1.23%) for three months in addition to weekly fluoride mouthwash. The Control Group (n=220) were from schools not using any preventive care. The white spot lesion index was used for white spot and active white spot lesion was used for active white spot lesion. The criteria used were: white active spot lesion is covered by a layer of plaque and stained with papanicolaou solution. No white spot is white spot or stained with dental plaque usually hard (Fournel et al, 1992). Groups 1 and 2 were significantly better in all parameters and toothbrushing frequency. The prevalence of active white spots was 21.5%. Control Group had 36.4%, Group 1, 16.4% and Group 2, 9.5% active white spots. A similar trend showed a difference between Control Group and Group 2 (p<0.05). Children consuming fluoridated water and using fluoride mouthwash and fluoridated mouthrinses as well as with active white spots and more inactive white spot lesions than those who did not. There were statistically significant differences between the MIC's of the three types of chlorhexidine and the remaining 3 antibacterial agents. This does not agree with previous studies that show lactobacilli to be less sensitive to chlorhexidine than streptococci (Gizdick et al 1982, Clayhorn and Bowen 1989).


This paper describes the prevalence and severity of gingival recession in Tanzanian adults covering the age range from 20 to 64 years. In addition it attempts to assess the relationship between the degree of gingival recession and the presence and amount of calculus. In the 20-34 years age group recession occurred in 22.8% of the black, 13.2% of the white and 22.6% of the population. Of the 20-34 years age group, lingual surfaces of mandibular incisors and canines followed by buccal surfaces of these teeth and the mesial surfaces of the mandibular molars were the most affected. Gingival recession was not present at all ages. All surfaces, especially at the line angle, all surfaces became gradually more affected, particularly the buccal and lingual surfaces of the first and second premolars. The prevalence of several surfaces of mandibular incisors exhibited on an average 1.3mm, 2.4mm and 3.2mm recession in the 20-44 years age group, respectively. Most of the correlation coefficients between gingival recession and calculus at the individual tooth surfaces are high (r 0.5 to 0.9), and statistically significant. The largest correlation coefficients (0.50-0.67) were found in the younger (20-24 year) age groups at the lingual surface of the mandibular incisors, canine and first premolar and at the buccal surfaces of the mandibular incisors. Based on these findings, the working hypothesis is advanced that longitudinal follow-up is an important determinant in the onset of gingival recession at sites exhibiting pronounced recession at a young age in populations deprived of prophylactic dental care.

23 Permeability of Human Vascular and Buccal Mucosa to a hydrophilic drug, Dextran, P. VAN DER BUL*, A. VAN EYK and I.C. THOMPSON. Faculty of Dentistry, University of Stellenbosch, Tygerberg 7505, South Africa.

In a previous study we demonstrated that human vascular mucosa was permeable as buccal mucosa to water (Van der Bijl et al. JDR 78, Abs. 80, 1997). The latter is, however, a very small molecule with a molecular weight of 18 Da. To further explore similarities between these two types of mucosa with respect to their permeability to macromolecules. We investigated the passive diffusion of a large hydrophilic molecule across these epithelia. Samples of fresh, clinically healthy human vascular and buccal mucosa were obtained from excised tissue obtained during surgery for vascular surgery. Permeation studies were performed using a flow-through diffusion cell (exposed area 0.039 cm²) and their permeability to a 4.4 kDa FITC-rheodextran. The permeability of human vascular mucosa was significantly higher than that of human buccal mucosa. Dextran was detected using a fluorophotometric method at excitation and emission wavelengths of 490nm and 520nm. Twenty biopsies from each specimen were examined. The FITC-dextran was detected in the epithelia of the vascular mucosa. This study was performed before and after permeability experiments and similarities between vascular and buccal tissues were verified. Mean steady state flux values, calculated from 1.02 ± 0.03 SEM, 0.8 ± 0.06 x 10⁻⁶ mmol/min were obtained for vascular and buccal mucosa, respectively. The data were not significantly different. The vascular and buccal specimens were exposed to different flow rates which resulted in different metabolic rates during the transport permeation studies. This study demonstrates that human vascular mucosa and human buccal mucosa have significantly different permeability and they support the hypothesis that the former may be used for studies in which the passive diffusion of macromolecules across the latter is required. The vascular and buccal tissues are used by the Unit of Histology, the SA Medical Research Council, University of Stellenbosch and SA Medical Research Council.

24 An Indication of Cytotoxicity of Enamels, Primers and Bonding Liquids. P.J. GERHARDY*†, M.G. DANNHEIMER*†, J.A. BOTHA* and A. GROBLER. Department Periodontics and Oral Medicine, Dept. Restorative Dentistry, Centre Stomatological Research, Faculty of Dentistry, University of Pretoria, Pretoria, South Africa.

Enamels, primers and bonding liquids are used routinely in restorative procedures. Although these compounds are only implicated for contact with hard tissues their occasional contact - accidental or purpose - with soft tissue of the oral cavity cannot be precluded. Some of these compounds have known for their strong chemical reactivity the possibility of cell and tissue toxicity exist, but is not known. In this study the cytotoxicity of eleven compounds on human gingival fibroblasts were determined by a simple contact procedure. Three compounds (3M Scotchbond Multi Purpose Primer 2; Scotchbond Multi Purpose Enamel Primer; ESPE KETAC Condor) had no cytoxic effect on fibroblasts. Six of the compounds (3M Scotchbond Ceramic Primer; 3M Scotchbond Multi Purpose Adhesive 3; Panavita 21 Ed Primer Liquid A; Panavita 21 Ed Primer Liquid B; Dyna-PGA Primer/Adhesive; Eichheit Liquid) had variable degrees of cytotoxicity which were noted as ranging from very little effect to severe toxic effect. In most of these cases the toxic effects on fibroblasts were observed within two hours after contact with the component. Two compounds (3M Scotchbond Enamel Primer Phosphoric Acid, Panavia Eichheit Agent B) had severe and immediate toxic effects on contact with fibroblasts. This indicates cytotoxicity confirms the need for more extensive research on the cytotoxicity of compounds used in restorative and other dental procedures.