321 Caries Inhibitory Effect of Fluoride Co-crystallized Sucrose- Establishing Field Trials MUKAYA DALLEANI* (Univ. of North Sumatera, Medan, Indonesia) and J.M. MUNTIRE (Univ. of Adelaide, South Australia)

As the caries rate of children in Indonesia increases, a field trial has been established to assess the efficacy of a 2% fluoride sucrose to inhibit caries development in a group of children whose diet can be strictly controlled. This method is based on modifications of those used by Looman et al. (1978) and Boyden and Pearson (1980) in order to include more traditional fluoride sources in developing countries. Preparatory work involved a detailed analysis of the children's diet, including other sources of fluoride, and in vivo experimentation to determine which fluoride was freely available intraradically. Repeated urinary analysis of fluoride excretion is being used to monitor total fluoride intake.

Each subject was examined three to five years before significant caries inhibition between test and control groups might be detected. The trial commenced in mid-1992, prior to which extensive caries recording, including bite-wing radiography, was carried out. Short-term effects are being tested using standardized clinical scores with artificial caries lesions present, which are bonded to selected teeth for three-week periods. Increase in mineral density was evident in those lesions in the test subjects compared to controls, one year into the trial. This result causes optimism for the "longer term ability of fluoride co-crystallized sucrose to provide clinical evidence of caries inhibition and thus to show that this method of caries control should be considered as a useful method in public health prevention of caries in developing countries."

323 An In Vitro Study of New Caries Disclosing Dyes
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The aim of this study was to assess the specificity of three new dyes, to stain carious lesions. Fifteen freshly extracted carious primary and primary-like permanent teeth had the dyes removed using a slow speed handpiece and a 35 mm round bur (SSA 04). Caries was removed until the cavity was clinical, by means, to be caries free. One of the dyes was then applied to the cavity floor of 5 primary and 5 permanent teeth and removed from only half of the cavity, the other half acting as control. The procedure was repeated on all cavities of the experimental teeth, but not controls. Ground sections (125µm thick) and demineralized sections (5-7µm thick) were prepared from the treated teeth. The prepared ground sections contained both experimental and control areas, the dyes used were Hematoxylin and Eosin and use of Gomori's methenamine silver. The microorganisms in both areas of control and experimental cavitations of the same section. The sections were dried with use of light microscope observations confirmed that the cavity had been removed completely due to gomorri stain and lack of specificity of the dyes applied. Of the three dyes, one was 40.4% and 5.5.3% the only one to exhibit differential staining between the experimental and control cases, but was not caries specific.

324 Caries Removal in Primary Teeth using Pulsed Nd:YAG Laser
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The aim of this study was to assess the efficiency of the Nd:YAG laser to remove caries from primary teeth. Twenty freshly extracted primary carious teeth, regardless of the size of the cavities, were treated using the Nd:YAG laser. Half the cavity was lasered leaving the other half untreated. The power levels and times were: 40mW with 10s, 40mW with 5s, and 80mW with 20s, or 100mW with 10s. A maximum operating time of 2 min was chosen to prevent overheating of the tooth. The laser energy was delivered by an optical fiber hand piece into the area of the cavity surface. Histological sections of un- and treated carious surfaces were cut and stained with Haematoxylin and Eosin staining of sections throughout the entire cavity showing the removal of both demineralized tissue and caries with and without any sign of damage from the laser. Micrographs of the prepared sections of treated teeth indicated that the degree of mineralization of the cavity floor after laser application was similar to that of the sound dentine. The remaining dentine was shown to be both clinically and histologically caries free.

325 Non-Invasive Treatment of Occlusal Caries. Results After 2 Years
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The aim of the study was to describe the 2-year results of an individualized treatment program designed to control occlusal caries in the first permanent molars. The sample consisted of 147 6-8 years old students divided in a control group (n=71) and a test group (n=76). The children of the control group were submitted to a preventive program based on patient education. All test children received a biannual basic preventive program and a recall system according to individual status of caries and periodontal disease activity. The teeth were partially or totally occlusal carious lesions in all the groups. The results of the analysis of the baseline, one and two years data, showed a significant reduction in the number of surfaces affected in both groups. In the beginning of the study there were 80 surfaces with active lesion (69 white spots and 17 cavities) and after two years remained only 3 surfaces with the disease. In the control group there were initially 81 active lesions as demineralized pits and 14 carious lesions and 23 surfaces with disease and 23 surfaces with lesions were filled. The children in the test group had 17 active caries lesions at the beginning of the study. From this group only 5 surfaces were filled. The study showed that the incidence of occlusal carious lesions is highly over surfaces with cavities. This study was supported by the CNPq, Grant 521007-96-3.

326 Intravenous Administration of Neuropeptides Enhances Bone Formation. C. SHID and H.T. YEH* (Department of Biology and Anatomy, National Defense Medical Center, Taipei, Republic of China)

Neuropeptide-peptidino-gene-related peptide (CGRP), substance P (SP) and vasoactive intestinal peptide (VIP) innervate nerve fibers that are co-exist in epiphyseal plate, periosteum, bone and bone marrow. Recent studies showed that CGRP plays a role in dentin mineralization and that neuropeptide stimulation affects both in vitro and in vivo. In addition, SP and VIP could enhance bone formation. To clarify the purpose of this study, we examined the potential of SP and VIP after intravenous administration. To this end, intravenous injection of SP (400 µg/kg, i.v. bolus) and VIP (10 µg/kg, i.v. bolus) was carried out in 6-week-old Sprague-Dawley male rat was performed two hours before surgery. By using Flow-Prepe density gradient separation method, light density (LD) bone samples and heavy density (HD) bone samples were harvested and seeded onto a previously prepared feeder layer of fibroblasts in Petri dishes. Ten days after adding LD white cells, in the control (without intravenous injection of SP or VIP), bone samples were stained and fired. After 14 days, intravenous injection of 400 µg/kg, 400 µg/kg of VIP (the all doses except 400 µg/kg-injected group there were 2 samples in each group with 40 and 40 specimens injected with 40 and 40), 10 µg/kg of VIP (p<0.01 and p<0.001): with 40 µg/kg of VIP there were 4 colonies (p<0.003). In addition, the size of bone colonies in the SP or VIP (40 or 40 µg/kg-injected group was significantly (p<0.001) increased as compared to the controls. The results of this study indicated that SP and VIP could enhance bone formation by stimulating their specific cell types, osteocytes and osteoblastic activity. This study was supported by National Science Council Grant NSC 83-0411-E-110-010.

328 Quantitative Evaluation of Composite Bone Graft Healing in Rats
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Previous studies have qualitatively evaluated the improved induction and integration of composite bone grafts (bone with added demineralised bone matrix powder, DBM) using histological methods. Aim: To quantitatively evaluate the healing capacity of composite intramembranous (BM) and of composite bone-endocondral (BC) bone grafts in rabbits. Methods: Two types of grafts were used: Bone matrix (BM) and Bone + BC = DBM. The Methods: Surgical defects were created in the skulls of 12 rabbits. Intramembranous grafts alone (5 rabbits), endochondral grafts alone (5 rabbits), and composite grafts of bone with demineralized bone matrix powder (BM + DBM) were implanted in rabbit and BC. Results: Bone and BC defects. Healing was evaluated, 2 weeks later, by image analysis of stained histological sections. New Bone was stained deeper red than old bone. Conclusions: The results with the composite bone grafts showed rapid osseous healing throughout the whole width and depth of the graft. The BC grafts showed 11% by area of new bone formation in 9% for the BM graft. Composite bone grafts showed 25% new bone whereas the IM + BM showed 32% new bone. The method error using the image analysis was 8%.

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