



Title	A randomized controlled clinical trial of home tooth-whitening products
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VP-2 The effect of Glycosaminoglycans on palatal fibroblast activities. X.H.ZOU¹*, K.W.C.FOONG¹, G. W.YIP², T.CAO¹, B.H.BAY².
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This study aims to investigate the effect of sulfated glycosaminoglycans (GAGs), especially Heparan Sulfate (HS) and Chondroitin Sulfate (CS) on rabbit palatal fibroblast activities. Two stages of experiments were carried out on passage 2 adult New Zealand White male rabbit palatal fibroblasts: 1). Fibroblasts were cultured with and without 30mM chlorate sulfate. Sulfated GAGs in the medium were quantified. 2). Fibroblasts were treated with: 30mM chlorate; 30mM chlorate with 100ng/ml HS; 30mM chlorate with 100ng/ml CS; or normal culture medium. Cell adhesion was quantified by MTS assay at 4, 6, 8 and 10 hours after cell seeding. Cell proliferation was assessed on day 3 and day 7 after cell seeding. Cell migration was observed at 4, 6, 12, 18 and 24 hours after creation of an *in vitro* wound-healing model. *t*-test was used to analyze the synthesis of sulfated GAGs while one-way ANOVA for cell adhesion and proliferation. Results showed that chlorate inhibited the sulfation of GAGs in the cell culture. When compared to the normal medium treated group, the chlorate treated group exhibited fewer adherent cells at 4, 6, 8 and 10 hours ($p < 0.05$), and slower cell proliferation on day 3 and day 7 ($p < 0.05$). In the *in vitro* wound-healing model, the wound of the chlorate-treated group closed slower than that of the normal medium-treated group. The addition of Heparan sulfate and Chondroitin Sulfate were able to partially reverse the above inhibitory effects of chlorate. Chlorate suppressed the sulfation of GAGs, and inhibited palatal fibroblast adhesion, proliferation and migration. However, HS and CS partially reversed the cellular inhibitory effects of chlorate. This study elucidated the beneficial effects of sulfated GAGs, specifically HS and CS have on rabbit palatal fibroblast activities. These findings have the potential to contribute to the development of novel therapeutics for improving clinical palatal mucosal wound healing and possibly regeneration. This study was supported by the Academic Research Fund (R-222-000-005-112) from the NUS.

VP-3 Innovative Tools for Early Oral Cancer Detection - Chemiluminescence and LED. R. SARAVANAN* and C.H. SIAR (Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia)

Advancements in cancer research have led to the innovation of contemporary diagnostic tools for early oral cancer detection. Vizilite* and glowsticks based on the principle of 'chemiluminescence' and Light Emitting Diodes (LED) are the latest diagnostic tools available for this purpose. The objective was to evaluate the potential value of chemiluminescence (Vizilite* and glowsticks) and LED as tools for the early detection of oral cancer, dysplasia and potentially malignant epithelial lesions (PMEL). The efficacy of these tools was assessed in terms of sensitivity, specificity and accuracy. A sample of 67 subjects aged 35 years and above, with a history of habits including smoking, alcohol consumption or betel quid chewing, with primary squamous cell carcinomas (SCC), previously treated SCC or PMEL were selected. The study was conducted in two phases. During the first phase of the study, Vizilite* was assessed on 40 subjects. In the second phase, glowsticks and LED were assessed on 27 subjects. Biopsies were performed on identified lesions in 37 subjects. Another 14 subjects had no lesions. In the remaining 16 subjects, a biopsy was not performed due to subject's ill-health. The biopsy results were correlated with the clinical observations and the sensitivity, specificity and accuracy were calculated. The findings are as follows:

Diagnostic Tools	(n)	Sensitivity (%)	Specificity (%)	Accuracy (%)
Vizilite*	32	100	85.7	96.8
Glow sticks	19	100	90	95
LED	19	100	90	95

(n) - Number of cases, (%) - Percentage.

Chemiluminescence and LED are effective in the early detection of oral cancer, dysplasia and PMEL. Glowsticks and LED may prove to be cheap, safe and non-invasive tools for screening high-risk individuals in clinics, health centres and remote areas devoid of modern healthcare facilities. This study was supported by the University of Malaya, Vote F Grant F0105/2002D.

VP-4 Clinico-pathological Study of Oral Premalignant Lesions and Conditions in Myanmar. Moe Thida Htwe*, Swe Swe Win and Ba Myint (Department of Oral Medicine and Pathology, Institute of Dental Medicine, Yangon, Myanmar)

Conventional microscopic study of grade of epithelial dysplasia widely used method of evaluating malignant potential. The purpose of this study was to determine the clinico-pathological status of oral premalignant lesions and conditions, and to determine the histological features including grade of epithelial dysplasia. All the archived formalin fixed paraffin embedded biopsy specimens along with the oral mucosal assessment forms were collected from Institute of Dental Medicine, Yangon and stained with H-E. Among 70 cases, leukoplakia (n=25) was the most common, followed by oral lichen planus (n=23) and oral submucous fibrosis (n=22). As for the grade of dysplasia, severe epithelial dysplasia was found in leukoplakia (56%), oral submucous fibrosis (41%) and oral lichen planus (26%) respectively ($p < 0.002$). These observations suggested that leukoplakia might be more frequent potential to malignant transformation than oral submucous fibrosis and oral lichen planus. Therefore, the patients with premalignant lesions and conditions should need to get early detection by means of histological diagnosis.

VP-5 Expression criteria for p16(INK4a) in oral Squamous Cell Carcinoma tumors. Auerkari EI*, Sarwono AT*, Widurini DS*, Suwelo IS*, Tjarta A**, Cormain S**, Eto K**, Ikeda MA**, *Fac. of Dent. Univ. of Ind., **Fac. of Med. Univ. of Ind., ***School of Dent. Tokyo Med. & Dent. University.

To improve the clinical outcome of oral squamous cell carcinoma (SCC), additional prognostic indicators have been sought from altered gene expression in tumors. A suggested indicator is the cyclin-dependent kinase inhibitor p16(INK4a), which is one of most frequently altered tumor suppressors in cancers including SCC. Loss of p16 expression due to altered gene provides a route to uncontrolled proliferation and is thought to be a relatively early event in carcinogenesis. However, to be applicable as a practical prognostic indicator, loss of p16 must be unambiguously measurable. In this study, 43 oral squamous cell carcinomas (SCC) were inspected for p16 expression. Considerable heterogeneity of p16 expression can be expected between individual tumor cells, different regions within a tumor and between tumors of the same patient. The extent or loss of p16 expression is often defined by percentage of p16 positive cells in the tumor, but it was shown that the suggested criteria for normal and abnormal expression are affected by the way the expression is measured. The limit criteria of expression can be significantly reduced for same tumors when using local minimum instead of overall mean percentage of p16 positive cells. Similarly, using the local minimum expression and fixing the limit criterion will reduce the proportion of tumors with indicated normal p16 expression. The fraction of tumors with indicated loss of p16 expression is generally decreased with decreasing applied limit criterion, but also depends on the sensitivity for detecting p16 expression.

VP-6 The Differences of Salivary Urea Level in Caries and Caries-Free Patients. ANNA MUSDHALIFAH, YESSY ARIESANTI*, TRINI BARTINI, BOEDI OETOMO ROESLAN (Faculty Of Dentistry, Trisakti University, Jakarta, INDONESIA)

Urea acts as buffer in the saliva especially when decreasing of pH occurs under critical value pH (5.2-5.5) that will cause enamel demineralization. Salivary urea profile in caries patient still remains unknown. The aimed of this study was to investigate the different of salivary urea level in caries patient and free-caries. Urea level in saliva of 10 caries patients and 10 free-caries were measured by using spectrophotometer at 525 wave length. The results indicated that urea level of caries patient (27.36 ± 3.60 mg dl⁻¹) was significantly higher ($p < 0.01$) than urea level of free-caries (22.93 ± 1.83 mg dl⁻¹) as analysed using student's *t*-test. By using the same test, it was founded that the saliva pH of caries patient (6.00 ± 0.67) was significantly lower than free caries (7.20 ± 0.42). There is a significant correlation ($r = -0.803$; $p < 0.01$) among salivary urea level and saliva pH which means the decreasing of saliva pH will be balanced by the increasing of salivary urea level. It can be concluded that salivary urea level can be used as indicator of caries possibility.

VP-7 A randomized controlled clinical trial of home tooth-whitening products. A.H.H. WONG*, C. McGRATH, E.C.M. LO (Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR, CHINA.)

Purpose: To evaluate the effectiveness of two marketed home tooth-whitening products. Materials and Methods: A randomized controlled clinical trial involving 97 adults who were randomly allocated into one of three groups: (a) 6% hydrogen peroxide whitening strips (Crest Whitestrips, P&G), (b) 18% carbamide peroxide whitening gel (Simply White, Colgate) and (c) a placebo (fluoride toothpaste) control group. The products were professionally dispensed and subjects were instructed individually in the correct way of using the given product. They then used the given product daily for two consecutive weeks. Colour was determined in brightness (L*), yellowness (b*) and redness (a*) [colour space] at baseline and 8 weeks after dispensing the product by employing a high resolution digital camera in imaging the subject's anterior maxillary teeth under standard polarized lighting conditions using a high-resolution digital camera (Fuji HC1000 CCD). The subjects also completed a questionnaire on self-satisfaction with the treatment outcome. Results: 1 way ANOVA (Bonferroni test) demonstrated significant differences in colour between the three groups with changes in brightness (ΔL^* , $P < 0.001$), yellowness (Δb^* , $P < 0.001$) and redness (Δa^* , $P < 0.001$). The magnitude of tooth-whitening, changes in L* $a^* b^*$ was greatest among those who used the 6% hydrogen peroxide whitening strips. In addition to the colour changes, subjects in the whitening strip group rated that product significantly ($P < 0.01$) more favourably than other groups with respect to the amount of whiteness improvement, as well as whitening satisfaction and overall impression while there is no significant difference between the Simply White and the placebo groups. Conclusion: Crest Whitestrips was more effective than Simply White and the placebo in tooth-whitening and in improving subject's self-satisfaction when used at-home for two weeks. Acknowledgement: This study was financially supported by Procter and Gamble (China).

VP-8 Total and free-ionised (NaF) or ionisable fluoride (SMFP) in tooth-pastes in Myanmar, 2002. *MAW KK, SOE W (Dept. Of Health, Yangon, Myanmar), HILDERMAN W VAN P (WHOCC, Nijmegen University, The Netherlands)

The availability of affordable and effective fluoride toothpastes is a major issue in promoting oral health of Myanmar. This study determined the effectiveness of fluoride toothpastes from Myanmar by establishing total and free ionisable fluoride contents, and also assessed whether the information on the package conforms to the international labeling requirements. In total, 21 fluoride toothpastes from Yangon were analyzed at the WHO Collaborating Centre For Oral Health in The Netherlands. The total fluoride (F) concentration of the samples was analyzed by gas liquid chromatography. The amount of soluble fluoride was measured after dilution in artificial saliva and treatment of the supernatants with acidic phosphatase. The free ionisable F concentration was measured with a fluoride electrode. Results: The total F and free F were ranging from 0-1254 ppm of total F, and 0-1000 ppm of free F. Of the 21 samples, 8 toothpastes did not mention the F concentration, 13 toothpastes with labels declaring the F concentrations, 31% contained a total F concentration less than the marked value and 69% have a free ionisable F concentration less than the marked value. Among 21 samples, 67% contained less than 700 ppm free ionisable F, 38% did not indicate the F formula, and 67% had no expiration or manufacturing dates. None of the samples, including the local brands, use Myanmar language for user-instructions. Deficiencies were found regarding total as well as free fluoride in many toothpastes marketed in Myanmar. Advocacy is needed for the manufacturers so as to produce effective and affordable toothpastes in Myanmar. This study was supported by WHOCC, The Netherlands.