12th Student Scientific Conference 2014

CRANIOFACIAL RESEARCH: Linking Technological Advancements to Human Values

DATE: 11 DECEMBER 2014 (THURSDAY)
TIME: 8.00AM - 4.00PM
VENUE: SCHOOL OF DENTAL SCIENCES, HEALTH CAMPUS, UNIVERSITI SAİNS MALAYSIA
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### Brittleness Comparison between Raw Gutta Percha from Indonesian Plants and Commercially Available Dental Gutta Percha

Arya Sanjaya\textsuperscript{a}, Kosterman Usri\textsuperscript{b}, Nina Djustiana\textsuperscript{b}

\textsuperscript{a}Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM21, Jatinangor 45363, Indonesia.

\textsuperscript{b}Department of Science and Technology of Dental Material, Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM21, Jatinangor 45363, Indonesia.

Gutta percha is a filler material that is often used for root canal treatment because of its good biocompatibility to the tissues. The gutta percha generally used is derived from \textit{Palaquium gutta}, a plant which is commonly found in Indonesia. However, the development of gutta percha is still rare in Indonesia. In fabricated dental gutta percha, brittleness can affect the success of the root canal filling. This study aimed to compare the brittleness of raw gutta percha from Indonesian plants and commercially available dental gutta percha. The samples were prepared by the method of applying pressure using the tools of cuvette. The brittleness of raw gutta percha from Indonesian plants and commercially available dental gutta-percha were assessed using Crease Recovery Tester (test equipment modifications ADA). Data were analyzed using Fisher’s exact test. The results showed that none of the five samples of raw gutta percha were broken while two out of the five samples of commercially available dental gutta percha were broken. It can be concluded that the raw gutta percha from Indonesian plants was less brittle than the commercially available dental gutta percha.

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### Psychological Well-Being and Its Relation to the Personality Type of Dental Students in Universiti Sains Malaysia (USM)

Yeo Wan Xi, Chai Meaw Han, Norkhafizah Saddki, Mohamad Syahrizal Halim

School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan.

The perception of distress and its impact on an individual’s quality of life give rise to psychological well-being. This study aimed to identify the sources of stress, to compare the psychological well-being between clinical and preclinical students, and to investigate its relation with the personality type of undergraduate dental students in Universiti Sains Malaysia (USM). A cross-sectional study among Year 1 to 5 students was done using self-administered questionnaire, which includes the Dental Environmental Stress (DES), Psychological General Well-Being Index (PGWBI), and Type A/B Personality Test. The response rate was 89.5%. Preclinical students stressed over academic performance, while clinical students experienced stress in patient management and examination qualifications. The most stressful factor reported was the fear of failing a course or year. Clinical students had significantly lower PGWB total score than preclinical students (\(p<0.001\)). Significant differences were observed between preclinical and clinical students in four dimensions of PGWB: anxiety (ANX), depressed mood (DEP), positive well-being (PWB), and vitality (VT). 45.5% students had low to moderate psychological well-being. Out of this, 87.6% were of Type A. In contrast, Type B contributed to 65.9% of high well-being students. Significant association was found between personality types and levels of psychological well-being (\(p<0.001\); the numerical data of these two variables also showed significant inverse correlation \((r=-0.710, p<0.001)\). In conclusion, there was significant difference in psychological well-being between phases of study and personality correlated closely with an individual’s well-being. The results recommend improvisation of the school education system and providence of assistance to vulnerable students in personality moulding and stress-reduction programme.
Dental and Craniofacial Morphology with Genetic Influence of ABO Blood Group in Orthodontics Patients of Hospital Universiti Sains Malaysia (Hospital USM), Malaysia

Fathin Fadhilah Ahmad Shokor, Yvonne Ng Yee Theng, Mohammad Khursheed Alam, Wan Suriana Wan Ab. Rahman
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The objective of this retrospective study was to evaluate the dental and craniofacial morphology with genetic influence of ABO blood group in orthodontics patients of Hospital USM. A total of 200 orthodontics patients were selected using simple random sampling. The blood group of each patient was determined using the tile method. Age, gender, race, overjet, overbite, crowding, spacing, incisor relationship, molar and canine relationship, index of treatment needed (IOTN), and lateral cephalogram were obtained from the patient’s records. Craniofacial morphology (SNA, SNB, ANB, MMA, ALFH, UIA, LIA, ULA, UL-E, LL-E) were digitally analyzed using lateral cephalogram. The mean age of the population of this study was 18.98±4.14. There were 25.5% of patients from blood group A, 27% of blood group B, 40% of blood group O, and 7.5% of blood group AB.

IOTN was used to determine the relationship between the severity of dental morphology and treatment needed. The highest prevalence in blood group A (33.3%) was IOTN grade 4 whereas blood group B (46.3%), AB (40%), and O (40%) showed the highest prevalence of IOTN grade 3. The results showed a significant difference between ABO blood group and overjet and complete bite (p<0.05), respectively. However, no significant difference between ABO blood groups and other dental and craniofacial morphology were found. In conclusion, this study has shown that there was a genetic influence of ABO blood group in relation to variation in overjet and complete bite. Hence, the type of malocclusion can be predicted in the respective blood group.

Development of Gypsum-Based Biomaterial for Dental Pulp Liner: Effect of Chitosan on Antibacterial Property

Nicholas Thong Li Jie, Ikhwan Hakimi, Hasan Subhi Azeez, Fazal Reza, Nurul Asma Abdullah

Antimicrobial properties of dental pulp liner may contribute to resist caries progression. The aims of the study were to evaluate antibacterial properties of the experimental gypsum-based chitosan (Gyp-CHT) biomaterials. Pure gypsum was mixed with 0, 2.5, 5, and 10% CHT solutions to prepare Gyp-CHT biomaterials. Antibacterial properties of Gyp-CHT were evaluated and compared with commercial materials, Dycal and Glass ionomer (GI), using agar diffusion test. A base layer of Brain Heart Infusion agar was prepared in Petri plates (n=9). Streptococcus mutans and sobrinus were seeded on the agar surface; six cavities were made in agar layer and filled with materials and incubated at 37°C in anaerobic condition. The inhibition zones (mm) were measured with caliper at 72 hours. Data were analyzed by one-way ANOVA, followed by post-hoc multiple comparisons test to detect significant differences (p<0.05). Gyp-CHT with 2.5, 5, and 10% CHT solutions showed antibacterial effect against Streptococcus mutans and sobrinus. Gyp-CHT with 0% CHT showed antibacterial effect against Streptococcus mutans only. Gyp-CHT with 10% CHT solution showed higher mean of inhibition zones than Gyp-CHT with 2.5 and 5% CHT solutions against both strains with no significant difference. Significantly less (p<0.05) antibacterial activity was observed with GI against Streptococcus mutans compared to Gyp-CHT with 10% CHT solution. However, Gyp-CHT with 2.5, 5, and 10% CHT solutions showed no significant difference with Dycal against both bacterial strains. Antibacterial properties were more evident with increase of CHT concentration. Pure gypsum is biocompatible and would act as scaffold to release active antimicrobial components of chitosan.
Oral Health Status of Hospitalised 11-12 Years Old Children at Hospital USM

Seah Shu Yen, Khairunnisa Shukri, Basaruddin Ahmad
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The aim of this study was to determine oral health status among hospitalised children in Hospital USM. Bedside dental screening was performed to assess the DMFT, Gingival Index, and Plaque Index of 11 and 12 years old patients admitted to paediatric ward between 10th of August 2014 to 11th of October 2014. Oral health related quality of life was assessed using Child-OIDP questionnaire. There were 23 patients included in the study. The mean age of the children was 11.3 years (range 11-12 years). Sixty one percent were female and 96% were Malay. Twenty two children have caries with a mean DMFT of 5.04 (SD=2.55) which is greater than the national and Kelantan population. The mean plaque score was 3.17 (SD=0.39) and mean gingivitis score was 1.65 (SD=0.49). There was a low negative correlation between DMFT and Child-OIDP impact score ($r_s$=-0.30, $p>0.05$). The highest oral health impact was self-esteem which affected 34.8% of the patients, followed by ability to clean teeth and emotional stability (30.4% and 21.7%, respectively). The lowest impact of the daily performances was on speaking, relaxing, and inability to do schoolwork. In conclusion, hospitalised children at Hospital USM have poor oral health with higher mean DMFT than the general population that affected their self-esteem and other daily performances. Interventions to address the oral health needs of this group of patients during their hospital stay are recommended.

Relationship between Facial Proportion, Six Maxillary Anterior Teeth Ratio, and Gender among Malay and Chinese Population

Tie Sing Yuang, Kugendran V Rajendran, Mohammad Khursheed Alam, Nafij bin Jamayet
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The aims of this study were to determine the distribution of facial types and compare the crown width/length ratio of six maxillary anterior teeth in three different facial groups in Malay and Chinese students in Hospital Universiti Sains Malaysia (Hospital USM). Study was carried out on 60 Malay and 60 Chinese (30 males and 30 females for each ethnic) students of USM. Data on facial index and crown width/length ratio of six maxillary anterior teeth (central incisors, lateral incisors, and canine) were collected. Descriptive statistics and independent $t$-test were used to compare the width/length ratio between different facial types. Among 60 Malays, there were 21.67% broad face, 33.33% average face, and 45% tall face. In the male group, the mean crown width/length ratio were 0.883±0.073 mm, 0.822±0.078 mm, and 0.870±0.086 mm, respectively, while in the female group, the results were 0.897±0.077 mm, 0.866±0.096 mm, and 0.904±0.102 mm, respectively. Among the 60 Chinese, there were 11.67% broad face, 51.67% average face, and 36.67% tall face. In male group, the mean crown width/length ratio were 0.883±0.079 mm, 0.879±0.093 mm, and 0.876±0.097 mm, respectively, while in the female group, 0.868±0.069 mm, 0.847±0.079 mm, and 0.862±0.090 mm, respectively. The mean crown width/length ratio of lateral incisor in Chinese male was significantly greater than that of Malay male. Within both ethnics, there was a significant difference in mean facial index between male and female. The mean facial index of Chinese female was significantly greater than that of Malay female. These disparities should be taken into consideration in the selection of appropriate tooth size and shape of anterior teeth for Malay and Chinese population.
Study of the Facial Golden Ratio and Awareness of Facial Appearance of Students in USM Health Campus

Tan Fo Yew, Tay Hui Wen, Mohammad Kursheed Alam, Rehana Basri, Nor Farid Mohd Noor
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

This study aimed to investigate the association of facial proportion and its relation to the golden ratio with the awareness of facial appearance among students in USM Health Campus. This was a cross-sectional study with 286 randomly selected USM Health Campus students (150 females and 136 males; 100 Malaysian Chinese, 100 Malaysian Malay, and 86 Malaysian Indian), with mean age of 21.54±1.56. Facial indices obtained from direct facial measurements were used for the classification of facial shape into short, ideal, and long. A validated structured questionnaire was used to assess subjects’ awareness of their own facial appearance. The mean facial indices of Malaysian Indian (MI), Malaysian Chinese (MC), and Malaysian Malay (MM) were 1.59±0.19, 1.57±0.25 and 1.54±0.23, respectively. Only MC showed significant sexual dimorphism in facial index (p=0.047; p<0.05) but no significant difference was found between races. Out of the 286 subjects, 49 (17.1%) were of ideal facial shape, 156 (54.5%) short, and 81 (28.3%) long. The facial awareness questionnaire showed that MC had the lowest satisfaction with mean score of 2.18±0.97 for overall impression and 2.15±1.04 for facial parts, compared to MM and MI, with mean score of 1.80±0.97 and 1.64±0.74, respectively for overall impression; 1.75±0.95 and 1.70±0.83, respectively for facial parts. In conclusion, (i) only 17.1 % of Malaysian facial proportion conformed to the golden ratio, with majority of the population having short face (54.5%); (ii) facial index did not depend significantly on races; (iii) significant sexual dimorphism was shown among Malaysian Chinese; and (iv) all three races were generally satisfied with their own facial appearance.

Potassium and Sodium Levels in Saliva of Patients with and Without Chronic Periodontitis

Muhammad Haikal Mahardhika, Ina Hendiani, Agus Susanto
Fakultas Kedokteran Gigi Universitas Padjadjaran, Bandung-Sumedang Highway KM.21, Jatinangor 45363, Indonesia

Chronic periodontitis patients may have different salivary potassium and sodium levels due to derivation of intracellular and extracellular source of ions from inflamed periodontal tissue into saliva. The aim of this research was to measure and compare potassium and sodium levels in saliva of patients with and without chronic periodontitis. This study comprised 30 participants, 15 chronic periodontitis patients and 15 healthy subjects. Probing depth was measured using calibrated probe. Saliva sample was collected using spitting method and the salivary potassium and sodium levels were measured using AAS spectrophotometry. The results showed no significant difference in salivary potassium levels in both groups (p=0.351) while salivary sodium levels were significantly different (p=0.004). It can be concluded that the salivary potassium levels did not differ while the salivary sodium levels differed between patients with chronic periodontitis and healthy subjects.
Retraction Practice among Orthodontists in Malaysia

Low Tze Fui, Nur Shaheera binti Idris, Norma Ab Rahman
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Introduction: The objectives of this study were to evaluate the variation in retention practice among orthodontists in Malaysia and also to identify the types of retainers commonly used in Malaysia. Methods: A total of 97 orthodontists were randomly selected. A questionnaire consisting of 25 multiple-choice questions was mailed. Data was analysed using SPSS version 22.0 and descriptive statistic was used. Results: A total of 32 responses were received. 59.4% of them practise in government setting and 40.6% are from private setting. Vacuum-formed retainer was the most commonly used removable retainer for both maxillary (46.9%) and mandibular (46.9%) arches followed by Hawley retainer (maxilla 43.8%, mandible 37.5%), and fixed retainer (maxilla 3.1%, mandible 9.4%). 78.1% of the orthodontists prescribed a full-time wear of more than 20 hours per day with the duration of 3 to 9 months for the maxillary arch as compared to the mandibular arch (71.9%). Only 18.8% of the orthodontists prescribed a part-time wear of retainer for the maxillary arch and 21.9% for the mandibular arch. Majority of the orthodontists did not instruct their patients to stop wearing removable retainers (71.9%) and fixed retainers (66.8%) at any specific time and they preferred them to wear retainers forever. Conclusion: Vacuum-formed retainer is the most commonly used retainer among orthodontists in Malaysia. Majority of the orthodontists prescribed a full-time wear of more than 20 hours per day with the duration of 3 to 9 months and they preferred the retainer to be worn forever.

Assessment of Dietary Intake and Oral Health Problems in Pregnant Women Attending the Hospital Universiti Sains Malaysia Antenatal Clinic

Liau Ee Jye, Nurul Wahida Mohd Hasan, Ruhaya Hasan, Norkhafizah Saddki
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The objectives of this cross sectional study were to assess dietary intake and oral health problems of pregnant women attending the Hospital Universiti Sains Malaysia antenatal clinic. A total of 117 pregnant women participated in this study. A semi-quantitative food frequency questionnaire specifically for pregnant women was used to obtain dietary data and a structured questionnaire was used to determine perceived oral health problems and oral health care practices. Most of the participants were above 40 years old (56.0%) with a mean age of 31.2 (SD=5.44), and the majority were in the third trimester (86.3%). About half of the women perceived their oral health as good or very good and were satisfied or very satisfied with their current oral health status; 55.6% and 53.0%, respectively. Common oral health problems reported by the women were bleeding gums (34.2%), cavitated tooth (29.9%), toothache (20.5%), and bad breath (17.9%). All women consumed adequate amount of protein. However, there were high proportions of women who did not have adequate intake of vitamin D (92.3%) and folate (90.6%). Additionally, riboflavin, niacin, iron, energy, and thiamine intake were inadequate for at least half of the women. A significant association was found between vitamin C intake and complain of toothache and between niacin intake and complain of cavitated tooth. In conclusion, oral health problems were common among pregnant women in this study and most of them had low intake of nutrient that are essential for pregnancy. An association between certain nutrients and oral health problems were apparent.
The Effect of Red and White Wine on Stainability of Nanofilled and Nanohybrid Resin Composite

Peerasukprasert T, Rodklai A, Chaisomboonphun P, Chanmanee N, Tanthanuch S, Kukiattrakoon B
Department of Conservative Dentistry, Faculty of Dentistry, Prince of Songkhla University, 15 Karnjanavanich Rd., Hat Yai, Songkhla, 90112, Thailand.

One of the factors that affect the longevity of esthetic restorations is discoloration. Consumption of wine might result in reduction of esthetic quality of resin composites. The aims of this study were to investigate the effect of red and white wine on color changes of nanofilled (Filtek Z350 XT) and nanohybrid resin composite (ESTELITE Σ QUICK, Premise, and Herculite Ultra) by imitating wine tasting trips. Thirty specimens of each resin composite were prepared. Before immersion, baseline data of color values was recorded using a spectrophotometer. Three groups of discs (N=10) were then alternately immersed in red, white wine, and deionized water (as a control) for twenty-five minutes and artificial saliva for five minutes for four cycles. Specimens were then stored in artificial saliva for 22 hours. This process was repeated for five days following immersion in artificial saliva for two days (1 trip). Subsequently, the process was repeated (as for 2 trips). After immersion, specimens were evaluated (on day 7 for 1 trip and day 14 for 2 trips) and data were analyzed by two-way repeated ANOVA, Tukey’s HSD, and a t-test (α=0.05). The results showed that red wine caused significantly higher color change (∆E* > 3.3) than did white wine and deionized water (p<0.05). Nanohybrid resin composites had significantly more color changes than nanofilled resin composite (p<0.05). In conclusion, the effect of red and white wine on the color changes of restorative materials depended upon physical and chemical composition of the restorative materials and the types of wine.

Parents Knowledge and Oral Health of Down Syndrome Children in Bandung

Puspita Hajardhinia, Eka Chemiawanb, Yetty Herdiyatib
aFaculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
bDepartment of Pediatric Dentistry, Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.

Down syndrome is characterized by central growth deficiency with delayed mental and physical development, including oral development. Children with Down syndrome cannot rely on themselves especially on oral health care so they need their parents’ help. The aim of this study was to get the data of parents’ knowledge level and the oral health of 6-12 years old children with Down syndrome in Bandung. The descriptive study with survey technique used multistage random sampling. The data of parents’ knowledge was collected from questionnaire that has been validated. The data of oral health of Down syndrome children was obtained from DMF-T and def-t index examination. The results showed that the average level of parents’ knowledge was 38.63. DMF-T index was 4.76, and def-t index was 5.30. The conclusion of this study was parents have a very high level of knowledge. DMF-T and def-t index in children with Down syndrome are high reflecting the level of poor oral health.
Prevalence of Temporomandibular Disorders among Dental Students in School of Dental Sciences, Universiti Sains Malaysia

Puteri Nur Ameerafarahin Md Amin, Leong Yee Hua, Nurhayu Ab Rahman, Masitah Hayati Harun, Norzaliana Zawawi
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Temporomandibular disorders (TMDs) are a subgroup of painful orofacial disorders involving pain in the temporomandibular joint region and fatigue of craniocervicofacial muscles. The aim of this cross-sectional study was to evaluate the prevalence of TMDs and to assess some risk factors among dental students of School of Dental Sciences, Universiti Sains Malaysia. Anamnestic questionnaires were distributed to 182 dental students from all academic years. The data obtained were analysed using SPSS software. Among these respondents, there was a prevalence of 16.07% students with TMDs. There was a significantly higher occurrence in females (75%) as compared to males (25%). Most of them (93.55%) had chronic onset while only 6.45% had onset of less than 3 months. Year 5 students (36.1%) had the highest prevalence of TMDs. Stress (52.8%) was the most common predisposing factor followed by chewing on hard or chewy food (41.7%). The relieving factors were massage (41.7%) and having a good night’s sleep (22.2%). In conclusion, TMDs problem do occur among dental students in Universiti Sains Malaysia with most of them suffering from stress as a major contributing factor.

Expression Analysis of Notch Signalling Pathway Molecules in SHED Cultured in Keratinocyte Growth Medium

Siti Aisyah Mohd Taha, Joanne Koh Su Ling, Ahmad Azlina, Khairani Idah Mokhtar, Thirumulu Ponnuraj Kannan

aSchool of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.
bHuman Genome Centre, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.
cKulliyah of Dentistry, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang.

The Notch signalling pathway provides important intercellular signalling mechanisms essential for cell fate specification and regulates differentiation and proliferation of stem or progenitor cells. The aim of this study was to detect the expression of molecules associated with Notch signalling pathway (Notch1, Jagged-1, Jagged-2, and Hes1) as well as stem cell marker (Nanog) in stem cells from human exfoliated deciduous teeth (SHED) cultured in specific differentiation medium; namely, keratinocyte growth medium (KGM). Total RNA was extracted from SHED harvested on day 1, 3, and 7. RNA was reverse-transcribed to obtain the cDNA and then proceeded with PCR using specific primers for Notch1, Jagged-1, Jagged-2, Hes1, and Nanog. PCR products were electrophoresed on a 2% agarose gel and stained with SYBR green. Notch-1 was highly expressed in SHED cultured in KGM and showed increase in density as the days progressed, while Jagged-1 and Jagged-2 though did express, decreased in expression as the days progressed. However, Hes-1 was not expressed in SHED cultured in KGM. Nanog showed expression only on day 3 and gradually increased in expression on day 7. This leads us to conclude that the Notch signalling pathway associated molecules, Notch-1, Jagged-1, Jagged-2, and stem cell marker, Nanog expressed in SHED cultured in KGM may be involved in the differentiation into epithelial-like cells in human dental pulp tissues.
Effect of Binahong Leaves (*Anredera cardifolia* (Ten) Steenis) on Gingival Injury Healing Process in *Rattus norvegicus*

Wika Putri Adriani\textsuperscript{a}, Idha Ardaningtiyas\textsuperscript{a}, Nurul Husna Wulansaria\textsuperscript{a}, Dian Nuraini Safitria\textsuperscript{a}, Ike Primalia\textsuperscript{a}, Erlina Sih Mahanani\textsuperscript{b}

\textsuperscript{a}School of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia
\textsuperscript{b}Biomedical and Pre-clinical Dept., School of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia

Binahong is a medicinal plant that is used to treat wounds by rural communities. It contains flavonoids, saponins, and alkaloids that are involved in healing process. The epithelium thickness is one of the parameters measured in healing process. The aim of this research was to investigate the epithelium thickness of gingiva healing process by topical application of Binahong leaves (*Anredera cardifolia* (Ten) Steenis). Thirty male rats 3 months of age, 150-250 g weight were subjected to injury using explorer ±3 mm length on the gingival mandibular up to the alveolar bone. Samples were divided into three groups: G1 without treatment, G2 treated with 1 cc povidone iodine solution, and G3 treated with 1 g of Binahong collision. Binahong collision and povidone iodine were given topically on gingival surface for 3 min on 1\textsuperscript{st}, 3\textsuperscript{rd}, and 5\textsuperscript{th} day. Histological preparations were made using Hematoxylin and Eosin staining for epithelium thickness calculation. Data were analysed by one-way ANOVA followed by LSD test. The result of this study showed that there was significant difference of epithelium thickness between groups (*p*<0.05). The study showed that topical application of Binahong collision can increase epithelium thickness on gingival healing.
The Difference in Surface Hardness of Nanofilled Composite Resin Before and After Exposure to Ready-to-Drink Soursop Juice

Aminah Yuli Pratiwi, Rahmi Alma Farah Adang, Denny Nurdin

Faculty of Dentistry, Universitas Padjadjaran, Jl Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
Department of Restorative Dentistry, Faculty of Dentistry, Universitas Padjadjaran, Jl Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.

Composite restoration is frequently used as a dental restorative material. Nowadays, the type of composite resins that is commonly used is nanofilled composite resin. Surface hardness is one of the mechanical properties of composite resin that is influenced by acid. Acid on ready-to-drink soursop juice can cause degradation of composite resin which decreases the surface hardness of composite resin. The aim of the research was to observe the difference in surface hardness of nanofilled composite resin before and after exposure to ready-to-drink soursop juice. This experiment involved 32 specimens of nanofilled composite resin in disc-form, which was 6 mm diameter and 3 mm thickness. The specimens were divided into two groups. For Group 1, they were immersed in artificial saliva; for Group 2, they were immersed in the soursop juice. The surface hardness of every specimen was measured before and after immersion using Vickers Microhardness Tester. The result of the experiment which was analysed using paired samples t-test showed significant differences (p<0.05) in means of surface hardness of nanofilled composite resin before and after they were exposed to the ready-to-drink soursop juice. The conclusion was that there were differences in surface hardness of nanofilled composite resin before and after exposure to ready-to-drink soursop juice.

A Pilot Study on the Effect of Locally Produced Propolis on Dentinal Hypersensitivity

Belinda Kiing Mei Yen, Gowry Paramasivam, Wan Zaripah Wan Bakar, Kasmawati@Norhidayati Mokhtar
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Dentinal hypersensitivity is a common oral health problem affecting many individuals globally. This study was aimed to investigate the effect of local propolis on dentinal hypersensitivity. Three patients who came to Hospital USM Dental Clinic with complaint of teeth sensitivity were chosen as subjects for this study. The patients were examined and 14 sensitive teeth in total were included in this study. Dentinal hypersensitivity was assessed using Verbal Rating Scale (VRS) and the degree of hypersensitivity was categorized into 0 (no discomfort), 1 (minimal discomfort), 2 (mild discomfort), and 3 (intense discomfort). Seven teeth were treated using local propolis and the other seven teeth using sodium fluoride. The patients were then recalled at 7th day and 28th day for the re-application of the agents and re-evaluation. The effect of local propolis in reducing dentinal hypersensitivity (average VRS score 1.57) was determined statistically using Wilcoxon Signed-Rank Test and the p-value was 0.015, showing a significant difference at p<0.05. Comparison of effectiveness in reducing dentinal hypersensitivity between local propolis and sodium fluoride (average VRS score 0.21) was done using Mann-Whitney U test which showed similar results of both agents (p=0.081). In conclusion, within the limitation of this study, local propolis can be a good option in treating patients with dentinal hypersensitivity.
Antibacterial Potency of Ethanol Extract of Grape Leaves and Ethanol Extract of Grape Seeds (Vitis vinifera) towards Streptococcus sanguis

Fathrdi Thoriq, Hening Tjaturina Pramesti, Dani Rizali Firman
aFaculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
bDepartment of Oral Biology, Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.

Grape leaves and seeds have been known to contain antibacterial compound such as polyfenol. The aim of this study was to compare antibacterial potency of the ethanol extract of grape leaves and seeds against Streptococcus sanguis. The study was laboratory experimental. Diffusion agar method was used to determine antibacterial potential of ethanol extract of grape leaves and seeds at 100-, 200-, and 400-mg/ml, against Streptococcus sanguis. The results were analysed statistically using ANOVA and multiple comparisons Games-Howell. The results showed that each of ethanol extract concentration of grape leaves and seeds inhibited Streptococcus sanguis growth. The average inhibition zone of ethanol extract of grape leaves and seeds at 100-, 200-, and 400-mg/ml on Streptococcus sanguis growth were 1.91±0.17 mm, 5.03±0.32 mm, and 10.19±0.80 mm for the leaves, and 5.94±1.12 mm, 7.87±1.33 mm, and 11.9±1.21 mm for the seeds, respectively. Based on inhibition zone diameter, it was concluded that ethanol extract of grape leaves and seeds are bacteriostatic for Streptococcus sanguis. The antibacterial potential of grape seeds ethanol extract was significantly higher than that of grape leaves ethanol extract.

Microleakage of Dual Cure Composite and Flowable Composite as Furcal Perforation Repair Materials: A Preliminary Study

Valerie Wong Xiu Ying, Foo Kent Room, Yanti Johari, Mohd Fadhli Khamis
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia

Iatrogenic furcal perforation is one of the most common undesired complications. However, the prognosis is favourable if a complete seal with a biomaterial is established almost immediately. Failure to seal the furcal perforation correctly results in an increased risk of bacteria invasion. The purpose of this in vitro study was to evaluate the microleakage of MTA, ParaCore (dual cure composite), and Gaenial Universal Flo (flowable composite) as furcal perforation materials. This study was conducted on 19 extracted human permanent molars. Upon decoronation of the tooth 4 mm above CEJ, endodontic access cavity was done followed by the creation of furcal perforation in the pulp chamber floor. The teeth were assigned randomly into three experimental groups (n=15) and two control groups; a positive and negative control groups (n=4). These perforations were then repaired with the intended biomaterials. After complete setting of each biomaterial, the teeth were coated with two layers of varnish, excluding the area of perforation. The teeth were then submerged into Indian ink solution for 24 hours. The samples were then sectioned bucco-lingually and evaluated for dye leakage. Data were analysed statistically using non-parametric Kruskal-Wallis tests. The negative and positive controls validated the microleakage study methods. Dye microleakage in each biomaterial varies. There was a statistically significant difference among the three experimental groups (p<0.05). In conclusion, Gaenial Universal Flo has the best sealing ability, followed by ParaCore, and lastly, MTA as furcal perforation repair materials in permanent molars.
Effects of Malaysian Propolis on Proliferation of Stem Cells from Human Exfoliated Deciduous Teeth

Chew Shi Fung, Hafizah Mohamad, Siti Nurnasihah Md Hashim, Ahmad Azlina, Aung Thu Htun
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Studies on the benefits of propolis in medical utilizations for its antibacterial, antifungal, antiviral, anti-inflammatory, antioxidant, tissue regeneration, and anti-tumoral activities have become popular recently. The objective of this study was to investigate the effects of propolis on proliferation of stem cells from human exfoliated deciduous teeth (SHED) via MTT assay. Propolis was dissolved in 2.5% ethanol and diluted in culture media into five concentrations. The overnight-seeded SHED was treated with propolis. MTT assay was done after 72 hours and the cell viability indices for propolis-treated SHED (groups 1, 2, and 3) were read via absorbance ray 4 hours later. Cell viability index was found to be higher in culture media with low concentration of propolis in comparison to control. This study showed that propolis at low concentration maintained and caused a slight increase in cell proliferation in comparison to control. Additional investigations are necessary for a better understanding of potential applications of propolis to enhance the proliferation of stem cells.

The Effectiveness of Topical APF Gel Therapy for Children at Pediatric Dentistry Clinic in Dental Hospital of Padjadjaran University

Ika Nuriani\textsuperscript{a}, Yetty Herdiyati\textsuperscript{b}, Anne Agustina\textsuperscript{c}
\textsuperscript{a}Faculty of Dentistry, Padjadjaran University, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
\textsuperscript{b}Department of Pediatric Dentistry, Faculty of Dentistry, Padjadjaran University, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
\textsuperscript{c}Department of Public Health, Faculty of Dentistry, Padjadjaran University, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor 45363, Indonesia.

Topical fluoride gel therapy for children is the application of fluoride gel to the tooth enamel. This descriptive study aimed to investigate the effectiveness of topical fluoride gel therapy applied in installation to children seen at the pediatric dentistry clinic in Padjadjaran University Dental Hospital from January to June 2013. Accidental sampling method was used in patient recruitment. The sample consisted of 21 children who received topical fluoride gel treatment in installation. The success of treatment was indicated by the percentage of total number of patients successful of treatment divided by the total number of patients examined. The effectiveness of topical fluoride gel was apparent as indicated by the results that showed a success rate of 95%. The increase of def-t index of children from the baseline was only 0.095. In conclusion, the application of topical fluoride gel in installation on children seen at the pediatric dentistry clinic in dental hospital of Padjadjaran University was successful, which was indicated by the high success rate and low caries increment.
Dental Implants – Perceiving Patient’s Satisfaction in Relation to Clinical and Electromyography Study on Implant Patients in Hospital Universiti Sains Malaysia

Tiffany Tang Sing Yi, Justin Wong Si-Jie, Mohammad Khursheed Alam, Rehana Basri, Shaifulizan Ab. Rahman
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The aim of this study was to evaluate the satisfaction of patients with posterior implants in Hospital Universiti Sains Malaysia (Hospital USM) in relation to the clinical success criteria and surface electromyography (sEMG) findings of the masseter and temporalis muscles. Subjects included patients who have undergone posterior dental implants placement in Hospital USM within 2011 to 2013. Subjects were interviewed using a questionnaire, and the clinical success criteria was determined based on The International Congress of Oral Implantologists. The myofunction of the masticatory muscles was assessed using sEMG and compared to the control group of patients without implants. Out of 21 subjects, all were satisfied with the aesthetics of their implant. Twenty of them (95.2%) were satisfied with its function and stability. As for clinical criteria, 100% (50) of the implants were successful with no pain, mobility, or exudates. SEMG findings showed that patients have significantly lower (p<0.01) basal or resting median power frequency but with muscle burst. During chewing, control subjects showed faster chewing action. There was no difference in reaction and recovery time of clenching for both groups. In conclusion, the satisfaction of implant patients was high, which was in relation to the successful clinical success criteria and sEMG findings.

Non-Surgical Periodontal Therapy with Adjunctive Subgingival Minocycline in Patients with Poorly Controlled Type II Diabetes: A Pilot Study

Lee Yan Ming, Ong Wann Chiing, Haslina Taib, Basaruddin Ahmad, Siti Lailatul Akmar Zainuddin
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The aim of this pilot clinical study was to evaluate changes in clinical parameters, fasting blood glucose (FBG), and oral health quality of life in chronic periodontitis with poorly controlled type II diabetes mellitus (T2DM) patients. Ten poorly controlled T2DM were randomly assigned to treatment with scaling and root planning (SRP) and SRP with subgingival minocycline administration. Clinical parameters documented were: pocket depth (PD), clinical attachment level (CAL), gingival bleeding index (GBI), plaque score (PS), and fasting blood glucose (FBG). Oral health quality of life [S-OHIP (M)] was also measured. All measurements were taken at baseline and 1 month post-intervention. Significant reductions in all the clinical parameters except FBG were seen in both SRP group and SRP + minocycline group after 1 month. However, there were no significant median changes in all clinical parameters and FBG when compared between the SRP and SRP + minocycline group. Median changes in SRP group compared with SRP + minocycline group were 1.75 (0.93) and 1.92 (0.84) for PD (p>0.005) and 2 (1.48) and 2.11 (0.63) for CAL (p>0.05). Oral health quality of life has also improved in both groups after the treatment (p<0.05) but there was no statistical difference in the S-OHIP additive score (ADD) between the groups (mean difference=9.4, se=1.78). Both treatments had significantly improved the clinical conditions of patients but this pilot study lacks evidence to support the effectiveness of adding minocycline as part of routine periodontal therapy. Further study with larger sample size is recommended.
Anterior Loop of Inferior Alveolar Nerve in Malaysian Population: A Cone Beam Computed Tomography Study

Loo Si Yi, Yap Lian Ching, Ramizu Shaari, Asilah Yusof
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

An anterior loop of the inferior alveolar nerve (IAN) may exist prior to exiting the mental foramen; thus, it must be assessed before any surgical procedures are performed in this region to avoid nerve injury. The objective of this study was to examine the visibility and length of the anterior loop of IAN in Malaysian population. Cone-beam computed tomography (CBCT) images of 165 subjects were included. Images were taken using Planmeca Promax 3D (Planmeca Oy, Helsinki, Finland) with standard exposure protocols. Image reconstruction was performed using Planmeca Romexis 2.9.2 (Planmeca Oy, Helsinki, Finland) software. The visibility of the anterior loop of IAN was determined and its length was measured for different age categories (18 to 39 years; ≥ 40 years) and sexes. The anterior loop of IAN was visible in 52.7% of subjects. The mean length and standard deviation were 2.84 mm and 1.28 mm, respectively (minimum length=1.28 mm; maximum length=5.93 mm). No significant differences were detected for the visibility (p=0.076) and length (p=0.067) of the anterior loop of IAN between age categories as well as its visibility (p=0.582) and length (p=0.427) between sexes. The anterior loop of IAN should be considered during surgical procedures in this region due to its visibility in more than half of the subjects. However, because of the variability of its length, radiographic assessment, preferably CBCT should ideally be performed for every patient. In the absence of CBCT, a safe distance of at least 6.5 mm between the anterior border of the mental foramen and the surgical site is recommended.

Palatal Rugae Pattern in Student of Minangkabau Tribe and Batak Tribe

Mentari Nurul Ilmaa, Nani Murniatiab, Djulaenahningsihb
aFaculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor 45363, Indonesia.
bDepartment of Oral Biologi, Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor 45363, Indonesia.

Palatal rugae are anatomical folds located on the anterior third of the palate, behind the incisive papilla. Growth of the palatal rugae is affected by genetic factor and they are known to be highly individualistic. Thus, it is used as an alternative method for identification because of its unique anatomical structure. The aim of the study was to discover the description of palatal rugae pattern in Minangkabau and Batak tribes. The study method used was simple descriptive quantitative and sample was taken by using consecutive sampling technique. The study was conducted from 2010 to 2012 at UKSU ITB and UPBM Unpad, where 21 students from UKSU and 21 students from UPBM participated. Maxillary impression of the subject was taken using alginate, from which a cast was created to determine the palatal rugae pattern. Shape and unification of rugae were recorded and compared according to Thomas & Kotze classification. The data was presented with simple frequency distribution table. The calculation result of palatal rugae pattern on distribution table shows that the most prevalent palatal rugae shape was wave, with percentage 54.48% for Minangkabau and 55.63% for Batak, while the most prevalent palatal unification was divergent, with percentage 73.68% for Minangkabau and 83.33% for Batak. Conclusion of the study showed that based on the shape and unification, wave and divergent were dominant shape between the two tribes.
Morphologic Assessment of Dentinal Interface on Nano Glass Ionomer and Dentin Replacement Material: SEM Study

Zainalfikry MF, Koh C, Rahman IA, Masudi SM
School of Dental Science, Universiti Sains Malaysia, Health Campus, 16150 Kota Bharu, Kelantan Malaysia.

Objectives: To compare dentinal interface characterization on nano glass ionomer, with or without surface pre-treatment and dentin replacement materials by means of scanning electron microscopy (SEM).

Methods: Twelve second premolars were selected. Class I occlusal cavity was prepared on each tooth and randomly assigned into four groups (n=3): Control group: no surface pre-treatment; Group 1: pre-treated with dentin conditioner or Group 2: pre-treated with Ketac N100 primer, all filled with Ketac Nano™ N100 [3M-ESPE, USA], and Group 3: pre-treatment with 37% phosphoric acid and bonding agent, filled with Smart Dentin Replacement (SDR) [Dentsply, USA]. After composite resin was filled in all samples, the crowns were sectioned to obtain dentin discs of 3 mm thick. Specimens were prepared for SEM and analysed.

Results: Control group showed a gap (40-80 µm) between the Ketac-nano/dentin interface and there was presence of smear layer. Group 1 showed better Ketac-nano/dentin interface with smaller gap (10-30 µm) but still with presence of smear layer. Group 2 showed a gap (30-60 µm) with absence of smear layer, but did not open up the dentinal tubules. Group 3 showed formation of adhesive interface at SDR/dentin and also absence of smear layer with exposed dentinal tubules. Conclusion: Group 3 (SDR) showed the best dentinal interface characterization followed by Group 1 and Group 2 (Ketac Nano™), where Group 2 showed better smear layer removal. Control group showed the worst dentinal interface characterization.

Pilot Study for the Assessment of Operator’s Accuracy in Detecting Early Occlusal Carious Lesion by Visual-Tactile Method in Malaysia

Chong Min Fui, Nor Azira Mohd Zabidi, Wan Zaripah Wan Bakar
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Visual-tactile method is still the most common practice in caries detection among dental operators in Malaysia. However, this method has been shown to have high specificity but low sensitivity and reproducibility. This study was conducted to determine the accuracy of visual-tactile method in diagnosing early occlusal caries lesion by dental practitioners in Malaysia. Fourteen posterior teeth were selected as samples for the assessment by 95 respondents from nine different states which diagnosed each tooth as either sound, early or advanced caries following the criteria set. DIAGNOdent pen which is known as an accurate diagnostic tool in detection occlusal caries was used as a gold standard and the result was compared with the respondent’s visual-tactile assessment. Percentage was calculated and the result of the percentage of accurate early occlusal caries detection using visual-tactile method was 43.23% (95% CI: 39.90, 46.56). In addition, the percentage of operators who misdiagnosed advanced lesion as sound or vice versa are 34.74% (95% CI: 24.99, 44.49) for one misdiagnosis, 6.32% (95% CI: 1.33, 11.30) for two misdiagnosis, and 1.05% (95% CI: -1.03, 3.14) for three misdiagnosis. From this pilot study, the level of accuracy for operators in Malaysia in detecting early occlusal caries lesion using visual-tactile method was relatively low. This finding is hoped to improve clinician’s awareness of the visual-tactile diagnostic method limitation so they will be more concern and other devices should be used as supplementary tool.
Evaluation of Different Hygiene Instruments on Titanium Implant Abutment

Nurhanani Nabilah Hanafi, Davina Peh Li Zhen, Norhayati Abas, Haslina Taib, Akram Hassan
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

The long-term success of dental implants is dependent upon maintenance regimes and the responsibility for providing this maintenance care will fall increasingly. This study was done to evaluate the titanium implant abutment surface in untreated and treated groups with different hygiene instruments by using scanning electron microscope (SEM). Initially, nine Dentium Combi titanium implant abutments were equally and randomly divided into three groups. Three abutments were selected as an untreated/control group (C), three abutments were treated with air powder abrasive system (AF), and the other three abutments were treated with rubber cup and pumice powder (RC). All abutments were mounted on Dentium implant analog embedded in a resin block. The entire surface of abutments in the treated groups was cleaned by two different hygiene instruments and fixed with 2.5% glutaraldehyde. One abutment from each group was randomly selected to be observed under SEM. Results from SEM showed that abutment from group C was not a smooth surface and revealed machine lines due to the milling process. The abutment from group AF created a generalized micropores and craters but the machine lines were still observed and intact. Meanwhile, the abutment from group RC showed irregular shape and diminished machine lines. In conclusion, the surface topography treated with air powder abrasive system showed more prominent machine lines but with generalized micro pits and pores on the entire abutment surface while the surface topography treated with rubber cup and pumice showed less prominent machine lines with obliterated scratches and pits.

Clinical Diagnosis: Perceived Competency of Clinical Year Dental Students at Universiti Sains Malaysia

Lidya Haminudin, Ong Kai Lin, Nurhayu Ab Rahman, Masithayati Harun
School of Dental Sciences, Universiti Sains Malaysia, 16150 Kota Bharu, Kelantan, Malaysia.

Attainment of self-confidence and competency in clinical and technical skills is one of the main objectives for the undergraduate dental curriculum. The aim of this study was to describe the self-perceived competency on clinical diagnostic skill amongst the fourth and final year students at the School of Dental Sciences, Universiti Sains Malaysia. An anonymous self-administered questionnaire was distributed to 40 fourth year and 60 final year students. Information requested were based on the respondents’ self-perceived competency in formulating clinical diagnosis of common oral disorders using a five-point Likert scale ranging from 1 (very little confidence) to 5 (very confident). Intra- and inter-year comparisons of results were analysed using SPSS software. A total of 98 questionnaires were returned, giving a response rate of 98%. The overall highest self-reported confidence scores were for identifying and addressing the patients’ chief complaint (mean=3.70, SD=0.735), the ability to distinguish different types of pulp and periapical diseases (mean=3.62, SD=0.806), and to recognize oral ulcer (mean=3.50, SD=0.763). Areas with the least confidence were the ability to recognize clinical characteristics of acute and chronic orofacial pain (mean=2.60, SD=0.917), to diagnose oral pigmented lesions (mean=2.60, SD=0.729), and in diagnosing red lesions (mean=2.51, SD=0.736). Students were generally less confident in tackling non-odontogenic oral lesions, orofacial pain, and more complex oral diseases in which they have less clinical exposure. Compared to fourth year students, final year students were more confident in all aspects of perceived competence.
The Contact Time of Dlingo Rhizome (Acorus Calamus L.) Ethanol Extract against Candida Albicans Isolate from the Oral Cavity

Tienneke Riana Septiwidyati\textsuperscript{a}, Warta Dewi\textsuperscript{b}, Indrati\textsuperscript{b}
\textsuperscript{a}Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.
\textsuperscript{b}Department of Oral Biology, Faculty of Dentistry, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Highway KM 21, Jatinangor, 45363, Indonesia.

Dlingo rhizome (Acorus calamus L.) is a traditional plant with antibacterial and antifungal properties. The dlingo rhizome ethanol extract inhibits the growth of Candida albicans at 2.5 mg/ml minimum inhibitor concentration. The purpose of this study was to determine the effective contact time of dlingo rhizome ethanol extract toward Candida albicans isolate that can be used as an alternative denture cleanser. This in vitro study was conducted using ten samples of Candida albicans isolate which was in contact with dlingo rhizome ethanol extract of 2.5 mg/ml concentration, at four different contact times and repeated once. They were cultured on Sabouraud Dextrose Agar and incubated, after which, its growth was evaluated. The preliminary result showed that the effective contact time of dlingo rhizome ethanol extract against Candida albicans was 5 minutes to 10 minutes, as the contact time could reduce the Candida albicans colonies more than 50% of its population. The conclusion from this study showed that dlingo rhizome, which contains flavonoid, saponin, and asarone, are effective to inhibit the growth of Candida albicans.

Utilization Test of Binahong Leaves (Anredera cardifolia (Ten) Steenis) on Gingiva Healing Process of Wistar Rats (Rattus norvegicus) Through Observation of Collagen Fiber Density

Wika Putri Adriani\textsuperscript{a}, Idha Ardianingtyas\textsuperscript{a}, Nurul Husna Wulansari\textsuperscript{a}, Dian Nuraini Safitri\textsuperscript{a}, Ike Primaili\textsuperscript{b}, Erlina Sih Mahanani\textsuperscript{a}
\textsuperscript{a}School of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia
\textsuperscript{b}Biomedical and Pre-clinical Dept., School of Dentistry, Universitas Muhammadiyah Yogyakarta, Indonesia

Binahong leaves are famous among the villagers. They usually use the leaves for healing of injuries. Binahong leaves contain flavonoids, saponins, and alkaloids that can affect the healing process. The aim of this study was to determine the utilization test and the effectiveness of Binahong leaves (Anredera cardifolia (Ten) Steenis) on gingiva healing process through observation of collagen fiber density. This study used 30 male rats (Rattus norvegicus), 3 months of age, 150-250 g in weight. The injury was made on the mandibular gingiva by scratching using explorer ±3 mm length and up to alveolar bone depth. The rats were divided into three groups. First group (GI) was not given either Binahong collision or Povidone Iodine, the second group (G II) was treated by 1 cc Povidone Iodine, and the third group (G III) was treated by 1 g of Binahong collision. Povidone Iodine and Binahong collision were applied topically for 3 min on 1\textsuperscript{st} day, 3\textsuperscript{rd} day, and 5\textsuperscript{th} day, following which the histological preparation was made using Tricrom Mallory staining for collagen fiber density observation. The data were analyzed by one-way ANOVA followed by LSD test. The result showed significant difference of collagen fiber density between groups according to the day of treatment ($p<0.05$). The conclusion, topical application of Binahong collision can increase the collagen fiber density thus speeding up the process of gingiva healing in Wistar rats.