ABSTRACT FOR THE 2nd INTERNATIONAL CONFERENCE BRAWIJAYA DENTISTRY

Global Trends in Higher Education, Research and Community Outreach: The Future Is Now!

Held at the Faculty of Dentistry, Brawijaya University, Malang City, East Java, Indonesia

On November 28th-29th and December 5th-6th, 2020

Editorial Information

Scientific Committee/Abstract Editors

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

RESEARCH ARTICLES

Application UV-VIS Spectrophotometry to Identify Dental Fluor Levels in Junrejo's Childhood Caries

Yully Endang Hernani[1], Trining Widodorini[1]*, Ninda Sekar Ayu[2]

[1] Department of Preventive Dental Public Health, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: trining.fk@ub.ac.id

ABSTRACT

Introduction: Dental caries is an oral disease with high prevalence, multifactorial disease, caused by various determinants and risk factors such as fluorine which important role in the prevention control of caries to determine and analyze fluorine of early childhood deciduous teeth due to Junrejo source water consumption on the incidence of dental caries by applying UV-VIS spectrophotometric. **Methods:** The research used analytic observational with cross-sectional approach and purposive sampling technique with the inclusion and exclusion criteria. The variables studied were the fluorine content of the deciduous teeth of Junrejo and dental caries in Junrejo Kindergarten. Previously, it was known that the fluorine content in Junrejo's drinking water was <0.0821 mg / L (the fluorine level was low, the standard quality fluorine was 1.5 mg / L). **Results:** The mean fluorine content of deciduous teeth from the UV-VIS spectrophotometry was very low, respectively 9.97 mg / L (standard deviation = 0.189) for caries deciduous teeth and 12.76 mg / L (standard deviation = 0,1829) for caries-free deciduous teeth and the dmf-t index examination on 47 respondents stated that 61.7% of respondents had a very high caries, 14.8% of respondents had a high caries, 6.38% of respondents had a moderate caries, 4, 2% of respondents had a low caries and 12.7% of respondents had a very low incidence of caries. **Conclusions:** There was a close relationship (0.848) and very strong effect (0.719) of the level of consumption of water with low fluorine on incidence of early childhood dental caries at Junrejo.

Keywords: Deciduous Dental Caries, Fluorine, UV-VIS Spectrophotometry

Identification of Porcine in Temporary Crown, Denture Base and Impression Materials Using Real-time PCR

Hubban Nasution*, Ika Andryas

Department of Prosthodontics, Faculty of Dentistry, Universitas Sumatera Utara, 20155 Medan, Sumatera Utara, Indonesia

*Corresponding author: hubban.nasution@gmail.com

ABSTRACT

Introduction: Lots of dental materials circulates around are imported overseas and sold freely on the market. This could cause anxiety for Muslim dentist who search for halal dental materials. Halal status that used for dental treatments still remain unclear. Thus, the current study was to identify porcine in dental materials using Real Time PCR. **Methods:** This research examined any probabilities of porcine DNA in temporary crown materials, denture base materials and impression materials (n=9). It was conducted in two stages. First, extraction of dental material's DNA and the second was Real-Time PCR analysis based on amplification curve and Ct score in yellow and green channel. **Results:** An analysis of samples based on green channel showed that all materials were not containing porcine DNA, but four out of nine samples were containing vertebrae DNA. **Conclusion:** All tested dental materials were not containing porcine. The halal status of the materials tested were still unclear.

Keywords: Identification of porcine, Temporary crown, Denture base, Impression material, Real-Time PCR

The Expression of VEGF-A on Pulp Cells After Pulp Capping With Propolis

Rahmavidyanti Priyanto[1,*], Mandojo Rukmo[2], Agus Subiwahjudi[2]

[1] Department of Conservative Dentistry, Faculty of Dental Medicine, Brawijaya University, Indonesia
[2] Department of Conservative Dentistry, Faculty of Dental Medicine, Airlangga University, Indonesia

*Corresponding author: rahmavid@ub.ac.id

ABSTRACT

Introduction: The pulp exposure induces angiogenic growth factor in dental pulp to participate in the revascularization as part of the healing process in the dentino-pulpal complex. Vascular Endothelial Growth Factor (VEGF) is a potent mitogen for endothelial cells, promotes endothelial cell survival and angiogenesis. Propolis is a natural material, non toxic, which has antibacterial, anti-inflammatory and immunomodulatory effects. However, the role of propolis on healing process measured by expression of VEGF-A of pulp cells has not been much explored. Thus, this study was conducted to examine VEGF-A expression after pulp capping with propolis on exposure rat pulp. **Methods:** Tooth preparation cavity has done in twenty four rats, which were divided into three groups. Group I applied with ethanol extract of propolis, Group II with calcium hydroxide and Group III directly with glass ionomer. The rats were sacrificed after observation period (7 and 14 days), then prepared for histological examination. Immunohistochemistry was performed using monoclonal antibody to VEGF. **Results:** The data showed that there are significant difference among all groups (p=0,00) with the greatest increase of the VEGF-A expression found in the group I which treated with propolis. The anti inflammatory properties of propolis would inhibits NF-κB activation, causing decrease of apoptosis cell. It also provide conducive situation for TGF beta 1 to stimulate VEGF expression. **Conclusion:** Propolis is potential for dental pulp revascularization in healing proccess of exposure pulp, which is characterized by increased expression of VEGF-A.

Keywords: Pulp, Propolis, VEGF-A expression

Dietary Pattern, Early Childhood Caries And Occlusal Characteristics Of Children In Wetlands

Renie Kumala Dewi[1]*, Isnur Hatta[2], Gina Elmawati[3], Khairunnisa Amalia Pratami[3]

[1] Department of Pediatric Dentistry, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin, 70122, Indonesia
[2] Department of Dental Public Health, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin,70122, Indonesia
[3] Dentistry Education Program, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin, 70122, Indonesia

*Corresponding author: renie.dewi@ulm.ac.id

ABSTRACT

Introduction: Early childhood caries (ECC) is a dental health problem that can affect the growth and development of teeth in children aged 6 years, or 71 months old. Several factors are affecting ECC, including dietary pattern. Parents living in wetlands often provide an improper dietary pattern with sugary foods and drinks, use wetland water for habitual. Wetlands are swamps with soil an acidity of pH 3.5 - 4.5. Severe ECC can cause premature loss of deciduous teeth, which lead to orthodontic problems. In children with severe early childhood caries (S-ECC), losing vertical dimension of occlusion were also reported to occur 2.5 times more. **Methods:** This analytical observational study with a cross- sectional design used 187 subjects, that consisted of mothers and children aged 3-5 years old in wetlands. The oral cavity of children was examined to determine the type of ECC (I, II, or III) and the occlusal characteristics of deciduous teeth, their mothers were asked to fill a questionnaire on children's dietary pattern. **Results:** Based on the Spearman test, obtained p≤0.05, showed children dietary pattern on ECC was p=0.01; children dietary pattern on occlusal characteristics of deciduous teeth was p=0.03. There were type I ECC (21.93%), type II ECC (43.85%), and type III ECC (34.22%). Occlusal characteristics, there were flush terminal plane (12.83%), mesial step (42.25%), and distal step (44.92%). **Conclusion:** There is an effect of the dietary pattern of children living in wetlands againts the prevalence of ECC and occlusal characteristics of deciduous teeth.

Keywords: Dietary pattern, Wetlands, ECC, Occlusal characteristics

The Effect of Blood Clam Shell (*Anadara granosa*) on the Depth of Deciduous Tooth Enamel Microporosity

Ambar Puspitasari[1,*], Prasetyo Adi[2], Nenny Prasetyaningrum[2], Annisa Larasati[3]

[1] Department of Pediatric Dentistry, Faculty of Dentistry, Brawijaya University, Malang, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Brawijaya University, Malang, Indonesia
[3] Faculty of Dentistry, Brawijaya University, Malang, Indonesia

*Corresponding author: ambarpuspitasari04@gmail.com

ABSTRACT

Introduction: Deciduous caries is one of the oral health problems in children. The prevention effort is to remineralize the teeth. One of the natural resources that can help the remineralization process was blood clam shell which contains 98,61% of calcium. The puspose of this study was to prove the effect of giving blood clam shell on the depth of deciduous tooth enamel microporosity. **Methods:** this research was a true experimental randomized post test only controlled group design in vitro. 25 samples of mandibular primary incisors were divided into 5 groups, group (K+) soaked in demineralization solution, group (K-) soaked in aquadest solution, group (P1) soaked in 1 mmol calcium solution, group (P2) soaked in 3 mmol calcium solution, and group (P3) soaked in 5 mmol calcium solution for 14 days. After submerging decidous teeth, a microporosity depth test of the tooth enamel was performed using a Scanning Electron Microscope (SEM). **Results:** The enamel microporosity depth were analyzed using the one way ANOVA test. This statistic test showed a significant difference of the microporisity depth in each group ($\alpha < 0.05$). There was a significant decrease of enamel microporosity depth at each increase of the calcium concentration of the blood clam shell. **Conclusion:** Giving blood clam shell (*Anadara granosa*) can reduce the depth of deciduous tooth enamel microporosity.

Keywords: Caries, Deciduous tooth, Blood clam shells (*Anadara granosa*), Enamel microporosity

The Methanolic Extract of *Physalis minima* Leaf activates Estrogen Receptor and Endothelial Nitric Oxide Synthase in Human Endothelial Cells Culture

Nur Permatasari[1,*], Dian Nugrahenny[1], Sasangka Prasetyawan[2]

[1] Department of Pharmacology, Faculty of Dentistry, Universitas Brawijaya, Indonesia
[2] Depatment of Biology, Faculty of Natural Science, Universitas Brawijaya, Indonesia

*Corresponding author: permatasarirazaq.fk@ub.ac.id

ABSTRACT

Introduction: 17-β estradiol (E2) has a vital role in the prevention of endothelial dysfunction that causes heart disease. E2 triggered nuclear colocalization of estrogen receptor β (ERβ) and endothelial nitric oxide synthase (eNOS) in endothelial cells. *Physalis minima* is a herbaceous plant in the Solanaceae family. Analysis of methanolic leaf extract of the plant found in the presence of steroids compound. The study aim was to provide evidence that the methanolic extract of *Physalis minima* leaf (MEP) could induce the expression of ERβ and eNOS. **Methods:** The experiment was done in cultured human umbilical vein endothelial cells (HUVECs), were exposed to E2 (100 nM) and MEP (0.05%) for 60 minutes, respectively. To visualize the expression of ERβ and eNOS, cells incubated with primary antibodies against ERβ and eNOS, followed by fluorescein isothiocyanate–labelled secondary antibodies. Nuclei were stained with TOPRO3 dye. Samples were evaluated using a confocal laser scanning microscope. **Results:** E2 and MEP induced the cellular expression of ERβ and eNOS in HUVECs. The distribution of both mostly in the cell nucleus, which was different from the basal state condition. **Conclusion:** The present study indicates that the methanolic extract of *Physalis minima* leaf stimulates ERβ and eNOS in endothelial cell, similar to 17- β estradiol.

Keywords: *Physalis minima*, Endothelial cells, eNOS, Estrogen receptor

Evaluation of Synthesis Method of Nanoliposome Papaya Seed Extract

Ratih Pusporini[1,*], Hanaa Omar Baabdullah[2], Veru Andyka[2]

[1] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, Malang, Indonesia, 65145.
[2] Dentistry Study Program, Faculty of Dentistry, Universitas Brawijaya, Malang, Indonesia, 65145

*Corresponding author: ratih.fk@ub.ac.id

ABSTRACT

Introduction: Prior studies mentioned that papaya seeds extract had many potentials as medicinal plants, such as antioxidants, anti-inflammatory, antibacterial, antidiabetic, anti-helminthic activities and potential bone healing. However, natural materials generally consist of macromolecular compounds, thereby reducing absorption. Nano-sized liposomes aim to improve the drug delivery system. The research aim is to evaluate the synthesis method of nanoliposome papaya seed extract and its characterization. **Methods:** Papaya seeds were extracted using the maceration method then synthesized into nanoliposomes combining Mozafari and sonication method with three different formulations with a ratio of lecithin and tween 1: 1; 1: 1,5 and 1: 2 respectively. Then characterized using ESEM (Environmental Scanning Electron Microscope) and PSA (Particle Size Analyzer). **Results:** The nanoparticle mean size Formula 1 (448,76±15,18 nm), Formula 2 (257,9±14,44 nm), Formula 3 (392,88±23,51 nm). **Conclusion:** Formula 2 with the lecithin: tween (1: 1.5) ratio showed the smallest measurement results compared to other formulas. This is contrary to the previous research which states that the greater the surfactant concentration, the smaller the size of the nanoliposomes produced. Further research is needed regarding other factors in the synthesis of papaya seed extract nanoparticles.

Keywords: Nanoliposome, Papaya seeds, Synthesis, Extract

Increasing the Surface Hardness of Self-cured Acrylic With Addition of Nanohydroxyapatite From Bovine Bone as Basic Material for Dental Models in Prosthodontics Clinical Skills Learning

Citra Insany Irgananda[1,*], Fatima[1], Kartika Andari Wulan[1], Silmi Assyarifah[2]

[1] Department of Prosthodontics, Faculty of Dentistry Universitas Brawijaya, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, Indonesia

*Corresponding author: citrainsany.fk@ub.ac.id

ABSTRACT

Introduction: The sharpening of tooth preparation skills must be obtained during the pre-clinical period of dental education, supported by the development of adequate learning media. One of the development is using dental models made from self-cured acrylic. However, the surface hardness value of self-cured acrylic is still smaller than that of tooth enamel, so it is necessary to add certain materials to improve the characteristics. One of the material that can be added is nanohydroxyapatite from bovine bone synthesis. It is very beneficial especially when it functions as a filler in the polymer matrix because it can increase the surface hardness value of a material. Objective of this study is determine the surface hardness value of self-cured acrylic with the addition of nanohydroxyapatite from bovine bone. **Methods:** This study used a True Experimental Study with a post-test only control group design. This study involved self-cured acrylic as the control group, and self-cured acrylic with the addition of 2%, 5%, and 8% nanohidroxyapatite from bovine bone as the treatment group. The data obtained was performed one-way ANOVA test. **Results:** Based on the ANOVA test, obtained $p < 0.005$ showed the difference between the control group and the treatment group. The higher mean number of surface hardness is in the sample with addition of 8% nanohidroxyapatite (18,30 VHN). **Conclusion:** There was an increases in the surface hardness value of self-cured acrylic with addition of nanohydroxyapatite from bovine bone as basic material for dental models in prosthodontics clinical skills learning.

Keywords: Surface Hardness, Self-Cured Acrylic, Nanohydroxyapatite, Bovine Bone

Correlation Between Oral Health Literacy and Quality of Life in Adolescent

Yuanita Lely Rachmawati*, Dyah Nawang Palupi, Merlya, Viranda Sutanti

Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: yuanita.rachmawati.fk@ub.ac.id,yuanita.rachmawati@gmail.com

ABSTRACT

Introduction: Adolescent is a vulnerable period of transition physical and psychological that may affect their life. Adolescents with inadequate oral health literacy are more prone to inadequate behavior and practices that place their health at risk. This study aimed to determine the association between oral health literacy and quality of life among adolescents. **Methods:** A cross-sectional survey was conducted with the chosen 375 6-grade students by a cluster sampling design in Batu City, East Java, Indonesia. Two validated questionnaires in the Indonesian version was full fill by the student independently after the parent sign the informed consent. Firat questionnaire was the short-form version of the health literacy dental scale with 7 question items, and the second was C-OIDP (Child Oral Impact Daily Performance) that consists of 8 questions to assess the quality of life. Also include information about parents' education status. **Results:** The female respondent was 51.2% and male 48.8% The fathers were 83% dan the mothers were 82,7% had a noncollege education. There was a positive correlation between total score oral health literacy and C-OIDP total scores ($p<0.05$). **Conclusion:** There was a correlation between oral health literacy and quality of life in the adolescent. The higher the score oral health literacy, the preferable quality of life.

Keywords: Adolescent, Health literacy, C-OIDP

Porcine Identification in Prosthodontics Materials

Ika Andryas*, Hubban Nasution

Prosthodontic Department, Faculty of Dentistry University of Sumatera Utara, Medan,20155, Indonesia

*Corresponding author: andryas_doc@yahoo.co.id

ABSTRACT

Introduction: The used of dental materials are one of essential need in dental treatment. These materials circulate around, imported overseas and sold freely on the market. However, halal status used for dental treatments still remains unclear which can cause hesitation for Muslims. This research identify and examines any probabilities of porcine existence in prosthodontic dental materials, mainly in soft denture lining and dental adhesives (n=6). Methods: This research conducted in two stages. Extraction of dental materials DNA and continued in Real-Time PCR. Sample preparation was done by lysing 20 mg tested materials to lysis buffer, vortex, incubate and precipitate until centrifuged. Thus, sample being kept under 4^{o}C until it ready to be used. The analysis based on amplification curve and Ct score in yellow and green channel using EASYFAST™ PIG/Suidae detection & Quantification kit (Progenus s a, Gembloux, Belgium). Results: This research found that 4 out of 6 samples (IPG-01, IPG-02, IPG-03, and ISD-02 were contain vertebrae DNA. Afterward, analysis of samples based on *green channel* (FAM). Conclusions: This research shows that all identified dental materials did not contain porcine.

Keywords: Porcine identification, Polymerase chain reaction, Soft denture liner, Dental adhesives

Correlation Dentist's Ergonomic Toward Body Posture and MSDS During Dental Filling

Merlya[1], Dyah Nawang Palupi Pratamawari[1], Yuanita Lely Rachmawati[1], Ghinayah Hasti Afifah[2]

[1] Department of Public Dentistry and Prevention, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: merlya.fk@ub.ac.id

ABSTRACT

Introduction: Dentists at risk of experiencing musculoskeletal disorders (MSD) reached 58.9% in Malang. Tooth filling treatment has a risk level of musculoskeletal disorders reaching 77.7% because it is carried out for a long time. The REBA (*Rapid Entire Body Assessement*) method is used to measure the dentist's posture when performing dental filling treatment, while NBM (*Nordic Body Map*) is applied to determine the severity of musculoskeletal disorders using a body map. The purpose of this research is to determine the correlation between the level of knowledge and ergonomic attitude of dentists on body posture and the severity of musculoskeletal complaints during dental filling in Malang. **Methods:** The sample size in this study was 31 people who were matched to the existing criteria using purposive sampling method. This cross sectional study is an analytic correlation. Data were collected using a validated questionnaire, REBA and NBM. Analysis to figure out the correlation between knowledge and attitude of dentists ergonomics on body posture and the severity of musculoskeletal complaints using the Kendall Tau correlation test. **Results:** There is meaningful correlation on the level of knowledge and attitude towards posture ergonomics and severity of complaints of musculoskeletal with p-value of 0.046, 0.034, 0.031, 0.044 ($p < 0.05$). **Conclusion:** The correlation is found between the level of knowledge and ergonomic attitude of dentists on body posture and the severity of musculoskeletal complaints during dental filling in Malang.

Keywords: Behaviour, Ergonomics, REBA (*Rapid Entire Body Assessement*), NBM (*Nordic Body Map*)

Decreased Pyramidal Cells Degeneration in Diabetic Rats with Tomato's Peel Extract Supplementation

Novi Khila Firani[1,2,3]*, Prasetyo Adi[3], Imam Sarwono[4], Kiki Merry Ramdhani[5]

[1] Biochemistry and Biomolecular Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[2] Clinical Pathology Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[3] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[4] Anatomical Pathology Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[5] Study Program of Medicine, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia

Corresponding author: novikhila.fk@ub.ac.id, novikhila@yahoo.com

ABSTRACT

Introduction: Diabetes Mellitus is a metabolic disease characterized by elevated blood glucose levels or hyperglycemia. Chronic hyperglycemia conditions can cause an increase in oxidative stress, which can lead to various complications, one of which is degeneration of brain cells. Antioxidants are needed to prevent diabetic complications. Tomatoes, especially their peels, are high in antioxidants which are thought to reduce brain degeneration. We investigate whether tomato's peel extract supplementation can reduce degeneration of cerebral cortex pyramidal cells in diabetic rats. **Methods:** This experimental study used twenty male wistar rats. Diabetic rats model used high-fat dietary induction and low-dose streptozotocin injection. The tomato's peel extract supplemented at a dose of 50, 100 and 150 mg/kg b.w orally for 4 weeks. Measurement of blood glucose levels were using point of care testing. Histopathologically calculating the number of cerebral cortex pyramidal cells degeneration were using Master Scan Dot Slide application. **Results:** There were decrease of blood glucose levels in diabetic rats supplemented with tomato's peel extracts. In addition, there were also significant decrease of pyramidal cells degeneration ($p<0.05$) in diabetic rats supplemented with tomato peel extract, with the lowest number of pyramidal cells degeneration in the dose of 150mg/kg b.w. **Conclusion:** Tomato's peel extract supplementation can reduce the degeneration of cerebral cortex pyramidal cells in diabetic rat.

Keywords: Diabetes Mellitus, Tomato's peel extract, pyramidal cell's degeneration, cerebral cortex

Parents' Oral Health Literacy and Their Child Quality of Life

Yuanita Lely Rachmawati, Dyah Nawang Palupi, Merlya, Viranda Sutanti

Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: yuanita.rachmawati.fk@ub.ac.id, yuanita.rachmawati@gmail.com

ABSTRACT

Introduction: It is well known that caregivers have a crucial role in precaution and supervision of children's oral health. There is a limited report on the effects of parenting oral health literacy on children's oral health. This study's objective was to determine the correlation between parent's oral health literacy on children's oral health-related quality of life. **Methods:** Fourteen kindergartens were randomly selected from official school registries, representing four districts in Batu City, in East Java, Indonesia. This study was a cross-sectional that used two questionnaires: Scale of Oral Health Outcomes for 5-year-old children (SOHO-5) for the child and a short-form Health Literacy Dental Scale (HeLD-14) for the parent. The SOHO-5 contain 7 items which consists of a child self-report by a single interview. The inclusion criteria were children aged 5-6 years old and their parents agree to participate by signing the consent, and there was no medical condition that could have influenced the study results. **Results:** Total of 306 parent-child dyads completing the study. The parents were 84% of mothers with 51% age more than 34 years old. Spearman analysis showed no correlation between the total score of HeLD and SOHO-5 (p=0.13). However, cross-tabulation in median score between low and high score HeLD and SOHO-5 showed 59% of parents with high score HeLD had a child with a high SOHO-5 score. **Conclusion:** There was no statistical correlation between parents' oral health literacy and their child's quality of life. Parents with adequate oral health literacy tend the children had a good quality of life

Keywords: Children, SOHO-5, HeLD-14, Parents

Tooth Discoloration Differences Between 0.2% *Chlorhexidine Gluconate* With Black Cumin Mouthwash (*Nigella sativa* linn)

Diah[1,*], Dea Yusnia Anggraeni[2]

[1] Periodontic Department, Faculty of Dental Medicine, Brawijaya University, Malang 65145, Indonesia
[2] Dentistry Education Program, Faculty of Dental Medicine, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: diahperio.fk@ub.ac.id

ABSTRACT

Introduction: 0.2% *Chlorhexidin gluconate* mouthwash is used to prevent the onset of plaque and caries, as well as prevent periodontal diseases that has side effects like stains and altered taste function. 0.2% *Chlorhexidin gluconate* mouthwash caused yellow or brown colored stain on teeth and tongue. Black cumin (*Nigella sativa* linn) is known for anti-bacterial, anti-inflammatory and eliminating bad breath. Currently, black cumin has been produced as mouthwash but it has not known yet whether it will cause discoloration of the teeth or not. This study aimed to determine any tooth discoloration differences between 0.2% *Chlorhexidine gluconate* and black cumin mouthwash (*Nigella sativa* linn). **Methods:** This study was a semi-experimental study. The research use pre and post test group design. Sampling is done by purposive sampling technique. Samples of 32 cow's teeth were divided into 2 groups. First group was soaked with 0.2 % *Chlorhexidine gluconate* mouthwash and the second group was soaked with black cumin mouthwash with both groups's color measured before and after immersion. **Results:** Black cumin mouthwash has tooth discoloration side effect, but not as much as 0.2% Chlorhexidine gluconate. This side effect may have caused by coloring ingredients in the mouthwash and thymoquinone compounds from black cumin which are known to influence tooth discoloration. **Conclusion:** The present study showed that black cumin mouthwash had less teeth discoloration side effect than 0.2 % *Chlorhexidine gluconate*.

Keywords: 0.2 % *Chlorhexidine gluconate,* black cumin, tooth discoloration

Comparing the Effects of Chewing Anna Apple and Rome Beauty Apple on Plaque Accumulation Level

Trining Widodorini[1,*], Diah[2], Ratih Ayu Kusumaningrum[3]

[1] Department of Preventive Dental Public Health, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Department of Periodontics, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: mvtriningw@gmail.com

ABSTRACT

Introduction: Dental and oral health need special attention from health workers and the community. Lack of oral and dental hygiene can cause various problems in the oral cavity, such as caries and periodontal diseases. Habit of eating fibrous foods can inhibit plaque growth and can be accepted as a plaque controller. Fiber rich food can be found in fruits, vegetables, nuts, and seeds. Fruits like apples can be consumed to get fiber supply for the body. Malang's apples have many superior varieties with each characteristics and specificities such as Rome Beauty, Manalagi, Anna, Sweet Caroline and Wangling. The purpose of this study was to compare of chewing of Anna apples with Rome Beauty in decreasing the level of plaque accumulation. **Methods:** This research was a pre-experimental study, with one group pretest posttest design. Population were students of Faculty of Dentistry, Brawijaya University Malang. Sampling is done by purposive sampling technique, and selected according to criteria. Samples divided into 6 group, wich treated with 10, 20 and 30 grams of Anna apple and 10, 20 and 30 grams of Rome Beauty apple. **Results:** Anova test results on plaque scores with Anna apple showed sig obtained 0.773 (sig> 0.05) means that there was no significant in the difference in plaque accumulation on all Anna apple doses. Likewise, the plaque score with Rome Beauty apple also showed insignificant results. **Conclusion:** There are no differences in a significant comparison of chewing apple Anna apple and Rome Beauty apple against plaque accumulation level.

Keywords: Anna apple, Rome Beauty apple, Plaque score

The Increasing Knowledge of Parents of Sdn Pandanwangi 1 About Simple Early Caries Detection and Dentition Growth After Training by Teledentistry

Ariyati Retno Pratiwi[1,*], Sinta Candra Wardani[2], Sakinah Azzahrah Adam[3], Azimah Nurin Nafilah[3], Anifa Rohmawati[3], Sabrina Anissizi[3]

[1] Department of Oral Biology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Department of Prosthodontic, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Program Study of Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: ariyatiretnop@ub.ac.id

ABSTRACT

Introduction: Based on RISKESDAS 2018, the DMF-T in children aged 5-6 years is 8.43 which indicates that Indonesian children are categorized as Severe Early Childhood Caries (S-ECC). However DMF-T index for elementary students in Malang City is 5.75. This value is also categorized as high according to WHO because it is in the range 4.5-6.5. One preventive action that can be taken is to provide training on early examination of caries and normal dentition growth to parents by teledentistry in pandemic era. This study to investigate the knowledge of parents about simple early detection and dentition growth after training by teledentistry. **Methods:** The samples were consisted of 102 participants. Dental health education was given by video, handbook, and virtual discussion. Pre-test was distributed before intervention with teledentistry, but post-test was distributed after that. Then, data were analyzed by T-Test with significant of difference <0.05. **Results:** The result showed that there is a significant difference for better knowledge post-intervention. The mean knowledge improved from 64,01% to 81,56%. Teledentistry is one of the dental health education used in pandemic era. It is innovative and low-cost. Healthy behaviours established in the early life of the child are often carried into adulthood. Improving oral health in childhood is fundamental for reducing dental caries. The effective level was showed a significant improvement in knowledge after providing to dental health education. **Conclusion:** It showed that dental health education by teledentistry can increase the knowledge of parents about simple early caries detection and dentition growth.

Keywords: Parents, Early Caries Detection, Dentition Growth, Dental Health Education, Teledentistry

The Influence of the Work Position of Professional Students on the Occurrence of Musculoskeletal Disorders (MSDs) while Carrying Out Treatment at Universitas Brawijaya Hospital

Yully Endang Hernani M[1,*], Setyohadi[2], Trining Widodorini[1], Zulfa Rusdya Saniyah[3]

[1] Department of Preventive Dental Public Health, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Department of Periodontics, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: yullyehm@gmail.com

ABSTRACT

Introduction: When performing treatment, dentists require accuracy in a relatively small area of treatment, namely the mouth area. Musculoskeletal disorders often occur due to the position of the body when working is less ergonomic or uncomfortable and occurs for a long time and repeatedly. Dental profession students work with a static and rigid body position when performing treatment at the dental unit. This study aims to determine the effect of work position on professional students on the occurrence of musculoskeletal disorders during treatment at the Brawijaya University Hospital. **Methods:** This research is an observational analytic study with a cross sectional study approach using Nordic Body Map (NBM), Test of Visual Perception (TVP) and Rapid Entire Body Assesment (REBA) tables which was conducted on 73 professional students. In the NBM table, the results of NBM data show that all respondents fall into the low Musculoskeletal Disorders (MSDs) complaint criteria. For TVP data It was found that most of them had good ergonomic posture or in other words 75% of the postures that ergonomics had been applied to. Meanwhile, for REBA, data obtained that most respondents are included in the medium / medium risk. **Results:** The result of the correlation test obtained that the correlation coefficient is -0.495 which is negative (-) and the correlation coefficient is 0.548 which is positive (+), it can be interpreted that there is a relationship between the work positions of both TVP and REBA on MSDs complaints using the NBM score. **Conclusion:** The regression test results obtained Adj R square value, namely 0.490, it can be concluded that the higher the risk of REBA and TVP, the MSDs complaint score will also be higher.

Keywords: Musculoskeletal Disorders (MSDs), Work Position, Dentist

Whatsapp as a Tool in Improving Dental Health Knowledge

Dyah Nawang Palupi Pratamawari[1,*], Citra Insany Irgananda[2], Merlya[1], Elzi Luthfi Hakim[3]

[1] Department of Community and Preventive Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Department of Prosthodontia, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: dyahnawang.fk@ub.ac.id

ABSTRACT

Introduction: WhatsApp is a popular messaging application in the world. As a media that connects people, WhatsApp can be used to deliver knowledge, especially in dental health education (DHE). Parents need dental health information about their kindergarten children and search for information using a smartphone. This research was aimed to analyse the effectiveness of education using WhatsApp to kindergarten students' parents. **Methods:** The study was taken by giving education about dental health using WhatsApp to the parents of Tanassa Al-Arafah Kindergarten in Malang, East Java. A questionnaire measured parent's knowledge of dental health. There were 44 respondents divided into nine groups with a facilitator. Every group was given a pack of information about toothbrushing, the sequence of dental eruption, food intake and healthy lifestyle for 15 days using WhatsApp daily. **Results:** Questionnaires were analysed using Wilcoxon Matched Pairs non-parametric test. The Statistic Test results show that there was an increase in parents dental health knowledge level after given the education using WhatsApp. There were 97,7% (43 respondents) reached an excellent score for the post-test. **Conclusion:** Dental Health Education using Whatsapp is effective in improving dental health knowledge.

Keywords: WhatsApp, Dental Health Education, Kindergarten's Parents

Transverse Strength of Reinforced Heat Cured Acrylic Resin Plate with Hydroxyapatite of Crab Shells

Diwya Nugrahini Hapsari[1]*, Wahyu Susilaningtyas[1], Sinta Candra Wardani[1], Adriansyah Tjahjono[2]

[1] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Jalan Veteran, 65145, Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Jalan Veteran, 65145, Malang, Indonesia

*Corresponding author: ipehprosto.fk@ub.ac.id

ABSTRACT

Introduction: Hydroxyapatite (HaP) is one of the natural minerals that is often studied in dentistry. HaP has the advantage of being a strong bone reinforced material to replace the function of missing bones. Crab shells (Scylla serrata) contain high enough calcium carbonate which can be used as a source of HaP synthesis. This research determine the effect of adding crab shella HaP to the transverse strength of heat cured polymerization acrylic resin. **Methods:** HaP is synthesized from crab shells using the wet method. Synthesized HaP were added to heat cured polymerization acrylic resin polymers with a percentage of 0%, 2% and 5% of the weight of acrylic resin powder, then 9 plates (65x10x2,5mm) were made for each group. The transverse strength of the acrylic resin plate was tested using Universal Testing Machine. **Results:** The average results of the transverse strength test showed a decrease in transverse strength in group with addition of HaP synthesis. The results of One Way Anova statistical analysis showed that there was an effect of adding mangrove crab shells to the transverse strength of heat cured polymerization acrylic resin ($p < 0.05$). PostHoc test results showed a significant difference ($p < 0.05$) in the HaP addition group of 0% with 2% and the 0% HaP addition group with 5%. **Conclusion:** HaP of crab shells has an effect on reducing the transversal strength of heat cured polymerization acrylic resin.

Keywords: Hydroxyapatite, Crab Shell, Acrylic Resin, Transverse Strength

Wound Healing Process with Kersen's Leaf Extract Gel on the Macrophage, Fibroblast and Epithelial Thickness in Traumatic Ulcer of the Wistar Rats

Miftakhul Cahyati[1]*, Putri Hafidhoh Septiarini[2], Biyan Aulia Kintari[2]

[1] Department of Oral Medicine, Faculty of Dentistry, Universitas Brawijaya, Malang, Indonesia
[2] Faculty of Dentistry, Universitas Brawijaya, Malang, Indonesia

*Corresponding author: miftacahyati.fk@ub.ac.id

ABSTRACT

Introduction: Traumatic ulcers are common oral lesion. The kersen's leaf (*Muntingia Calabura L.*) extract gel containing flavonoids, saponins, tannins that it can increase the number of macrophages which will migrate to the wound area then wound healing will be fast. Fibroblast play an important role in ulcer wound healing to synthesis collagen. This research aimed to know the influence of the kersen leaf extract gel *Muntingia Calabura L.* toward the number of macrophage, fibroblast and epithelial thickness in traumatic ulcer of the wistar rats. **Methods:** The research method used was true experimental using the Post Test Only Randomized Control Design Group in Wistar rat. The sample was split randomly and divided into 6 groups, the control groups who were not given the kersen leaf extract gel and the treatment groups was given a kersen leaf extract gel and was decaputated in day 3rd, 5th, and 7th. Hard tooth tissue was taken and Hematoxylin Eosin staining. **Results:** The results of the independent t-test showed a significant difference between the control group and the treatment group $p < 0.05$. Macrophages at 3rd day, fibroblast at 3rd day and epithelial thickness at 7th day. **Conclusion:** The conclusions of research on the kersen leaf extract gel have an effect on the amount of macrophage, fibroblast and epithelial thickness in traumatic ulcer of the wistar rats.

Keywords: Kersen, Macrophages, Fibroblast, Epithelial Thickness, Traumatic Ulcer

Relationship of Patient Assessment on Dental Communication Using DPFC Questionnaire with Patient's Sociodemography in Dental Clinic, Brawijaya University

Trining Widodorini[1]*, Khusnul Munika Listari[2], Amalia Ayu Farhana Sutomo[3]

[1] Department of Preventive Dental Public Health, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Department of Periodontics, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: mvtriningw@gmail.com

ABSTRACT

Introduction: Dentist-patient communication is a very important factor in to the therapeutic process in a hospital. Studies have shown that there are several patient sociodemographic factors that can affect the communication between doctors and patients, namely age, gender, education, occupation, income, and the last time the patient visited the dentist. A dentist skill-based questionnaire with a quantitative approach such as the DPFC (Dental Patient Feedback on Consultation's Skills) questionnaire can be used to build further insights about dentist-patient communication. This study aims to determine the patient's assessment of dentist communication skills by using the DPFC questionnaire at the Dental Department of Universitas Brawijaya Clinic. **Methods:** This type of research is observational analytic with a cross-sectional survey research design. 43 patients filled out the DPFC questionnaire. **Results:** The data were then analyzed using Chi Square, Likelihood Ratio test, and Spearman Correlation Test, which shows that one of the independent variables that is gender has correlation with DPFC quiestionnaire with significant value 0,035 (p>0,05). **Conclusion:** The conclusion of this study is that from many sociodemographic characters that may affect patient evaluation of dentist communication, only gender that showing a correlation, with negative sufficient level of correlation.

Keywords: Dentist-patient communication, DPFC, Sociodemography

Effects of *Carica papaya L.* Extract Nanoliposomes on VEGF Periodontitis Diabetic Model Rats

Lukman Hakim Hidayat[1]*, Ratih Pusporini[2], Khusnul Munika Listari[3], Yully Nugraheni[4], Komang Mahendra Wardana M[5]

[1] Department of Oral Medicine , Faculty of Dentistry, Brawijaya University, Malang 65151, Indonesia
[2] Department of Oral Biology , Faculty of Dentistry, Brawijaya University, Malang 65151, Indonesia
[3] Department of Periodontology , Faculty of Dentistry, Brawijaya University, Malang 65151, Indonesia
[4] Department of Conservative Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65151, Indonesia
[5] Faculty of Dentistry, Brawijaya University, Malang 65151, Indonesia

*Corresponding author: lukmanhakimfkg@ub.ac.id

ABSTRACT

Introduction: The tissue healing process in periodontitis accompanied by diabetes mellitus disrupted due to a persistent of inflammation. The tissue damages widespread due to inflammation will be accompanied by an increase in angiogenesis initiated by growth factors such as VEGF. The flavonoids and quercetin contained in the papaya seed used to suppress inflammation and accelerate the proliferation. The aim of this study is to determine the effect of the 96% nanoliposomes papaya seed ethanol extract on VEGF expression in diabetic periodontitis rat. **Methods:** This study used a laboratory experimental research design in vivo, namely the Randomized Post Test Only Control Group Design, consisting of 36 rats divided into a control group (K) untreated diabetic periodontitis rats, treatment group 1 (P1) Diabetic periodontitis rats given 96% papaya seed ethanol extract and treatment group 2 (P2) Diabetic periodontitis rats given 96% nanoliposome papaya seed ethanol extract. Each group was decapitated on days 4, 8, and 15, then tissue histological preparat were made with IHC staining to calculate the amount of VEGF expression. **Results:** The result of data analysis using One-Way Anova there are significant differences between treatment groups ($p < 0.05$) in each time series. The post-hoc test showed significant differences between groups on day 14, with the highest average number in the control group and the lowest in the treatment group. **Conclusion:** Based on this study, it can be conclude that there is an effect of the nanoliposome papaya seed ethanol extract on VEGF expression in diabetic periodontitis rat.

Keywords: Periodontitis, Diabetes Mellitus, VEGF, Nanoliposomes, Papaya seeds

The Effect of Nanotransfersome of Citrus aurantifolia Swingle's Peel on TGF-β Expression in Wound Healing of Wistar's Mucosa

Nenny Prasetyaningrum[1]*,Diena Fuadiyah[1], Khusnul Munika L[2], Alda Firgita Islami[3]

[1] Department of Oral Biology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia.
[2] Department of Periodontology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[3] Dentistry Education Program, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: n3ny.fk@ub.ac.id

ABSTRACT

Introduction: The wound healing process of traumatic ulcer is affected by Transforming Growth Factor-β (TGF-β). The roles of TGF-β in wound healing process are to regulate fibroblast proliferation, stimulate angiogenesis, synthesize collagen, and also help deposition and remodelling of the new extracelullar matrix. The flavonoid substance in lime peel can induce TGF-β production. The effectiveness of lime peel extract is increased by transforming the drug delivery systems into nanotransfersome. The objectives of this study is to determine the effect of nanotransfersome of Lime Peel Extract (*Citrus aurantifolia* Swingle) on TGF-β Expression in Wound Healing of Wistar's Labial Mucosa. **Methods:** Preparation nanotransfersome of ethanol extract *Citrus aurantifolia* Swingle's peel by sonication method. The in vivo experimental study was carried out by conducting thermal induction of wistar's labial mucosa which were divided into four groups. Then each group was induced on the 3rd and 7th day. The groups consist of negative control group (K-3) and (K-7), positive control group with triamcinolone acetonide 0,1% (K+3) and (K+7), extract group (P3A) and (P7A), nanotransfersome group (P3B) and (P7B). Observation of TGF-β expression was carried out by light microscopy with magnification of 1000x. **Results:** Data analysis using the one way ANOVA test showed a difference of TGF-β expression between control groups and participant group at 3rd and 7th day. **Conclusion:** Nanotransfersome of *Citrus aurantifolia* Swingle's peel can increase the number of TGF-β expression during wound healing in wistar's mucosa.

Keywords: TGF-β, Nanotransfersome, *Citrus aurantifolia* Swigle's peel, Wound healing

Role of Tooth Graft in Stimulating Osteoclasts and Osteocytes

Ega Lucida Chandra Kumala[1]*, Malianawati Fauzia[1], Aryati Retno Pratiwi[2]

[1] Department of Periodontology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia.
[2] Department of Oral Biology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia.

*Corresponding author: ega.fk@ub.ac.id

ABSTRACT

Introduction: Bovine graft is material that have been used in bone regenetarion for many years. Tooth graft at the present time become substitute of bovine graft. Tooth graft contain organic and anorganic material that similar to bone composition. This study was to determine the role of toothgraft in stimulating osteoclasts and osteocytes. **Methods:** The research design used was Post-Test Only Group Design. The experimental animals were divided into 4 groups, each consisting of 6 wistar rats, the first group was given bovine graft hydroxyapatite in the socket of mandibular incisor extraction. The second group is given hydroxyapatite toothgraft in the socket of the mandibular incisor extraction. The first and second groups's mandibles will be decaputed on the 14th day. The third group was given bovine graft hydroxyapatite in the socket of mandibular incisor extraction. The fourth group is given hydroxyapatite toothgraft in the socket of the mandibular incisor extraction. The third and fourth groups were taken their mandibles on the 30th day. The number of osteoclasts and osteocytes was calculated from the tissue histology preparations. **Results:** The average number of osteoclasts in the bovine graft and tooth graft on day 14 was higher than in the 30th day. While the average number of osteocytes in bovine graft is lower than tooth graft both on the 14th day and 30th day. **Conclusion:** Tooth graft stimulates osteoclasts smaller than bovine graft and stimulates more osteocytes than bovine graft.

Keywords: Tooth graft, Bovine graft, Osteoclast, Osteocyte

Differences in The Pressure Strength of Dental Models Based on Self-Cured Acrylic With The Manufactured Dental Model and Dental Enamel as A Prostodonsia Clinical Skills Learning Media

Fatima[1]*, Citra Insany Irgananda[1], Kartika Andari Wulan[1], Farida Audinarti Tabatya[2]

[1] Department of Prosthodontics, Faculty of Dentistry Universitas Brawijaya, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: fatima_igm@ub.ac.id

ABSTRACT

Introduction: Manufactured dental model as a learning media of the skills lab has not been fully able to describe the actual condition of the teeth thus affecting the preparation ability in the pre clinical and clinical times. Therefore we need a new media that has physical and mechanical properties similar to natural teeth, especially its compressive strength. Compressive strength is the teeth ability to hold the compressive force due to mastication. Self- cured acrylic is a material that can be utilized in making new media because its colour resembles real teeth, meets biological and mechanical requirements. This study compared the difference in compressive strength between self-cured acrylic dental models, manufactured dental models and human dental enamel. **Methods:** This comparative study design employed with observational analysis, involving 3 groups (10 samples each group): the self-curing acrylic, the manufactured, and the natural enamel groups. All of the samples were prepared into blocks with the length of 5mm, width of 3mm and height of 2mm, using the buccal side that protrudes. The samples compressive strengths were tested using Micro Load System Universal Testing Machine. **Results:** The resulting Means of compressive strengths for dental enamel, manufactured, and self-curing acrylic samples were respectively 486,6 Mpa, 485,9 Mpa and 482,84 Mpa. The analysis with oneway ANOVA showed $p = 0,476$ where $p > 0,05$ means no significant differences of the compressive strengths among the groups. **Conclusion:** The self-curing acrylic dental model has a competitive value as compared to the manufactured and is promising to be developed as a new aid in learning prosthodontics clinical skills.

Keywords: Compressive Strength, Self-Cured Acrylic Based Dental Model, Manufactured Dental Models, Dental Enamels

Differences of Flexural Strength Between Nanofiller and Nanohybrid Composite Resin with Bulk Fill Techniques

Chandra Sari Kurniawati[1]*, Faidah[1], Nadea Rakaputri[2]

[1] Department of Concervative Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Faculty of Dentistry, Brawijaya University, Veteran Malang, Malang 65145, Indonesia

*Corresponding author: chandrasari.fk@ub.ac.id

ABSTRACT

Introduction: One of the mechanical properties of composite resin is flexural strength, which is the ability of restorative material to withstand compressive and tensile forces in the oral cavity.The newest technique of composite resin restoration is the bulk fill technique, which only use one application of the composite material with a depth of 4-6 mm to save time. This study aims to determine the difference in flexural strength between nanofiller composite resin and nanohybrid composite resin using bulk fill technique. **Methods:** A laboratory experimental study was conducted with a post test only group design, this study involved 2 types of composite resins, which is the nanofiller composite resin as Group 1 and the nanohybrid composite resin as Group 2. Samples with block shapes have a size of 4 x 4 x 25mm as many as 10 in each group, then each sample was polymerized for 20 seconds, and put in an incubator at 37^{o}C for 48 hours. The bending strength of the samples was tested by using Universal Testing Machine. **Results:** The statistical results using the independent t-test were $p = 0.03$ where $p < 0.05$, which means that the difference in flexural strength was significant between nanofiller composite resin and nanohybrid composite resin with bulk fill technique. **Conclusion:** the flexural strength of nanofiller composite resin with bulk fill technique is greater than that the nanohybrid composite resin with bulk fill technique.

Keywords: Composite Resin, Flexural Strength, Bulk fill, Nanofiller, Nanohybrid

Evaluation of Biocompatibility of Fish Scales Nanohydroxyapatite on Preosteoblasts MC3T3-E1 Cell Line

Sinta Candra Wardani[1,2,*], Hidayat Sujuti[3], Edi Mustamsir[4], Diwya Nugrahini Hapsari[1]

[1] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[2] Master Program in Biomedical Sciences, Faculty of Medicine, Universitas Brawijaya, Malang 65145, Indonesia
[3] Department of Biochemistry-Molecular Biology, Faculty of Medicine, Universitas Brawijaya, Malang 65145, Indonesia
[4] Department of Orthopedic and Traumatology, Faculty of Medicine, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: sinta.candra@ub.ac.id

ABSTRACT

Introduction: In vitro evaluation is an initial test of the biocompatibility of a material before in vivo test or clinical test on humans. The material tested in this study was nanohydroxyapatite derived from fish scales. In the future, this material is expected to be used as a scaffold and applied to bones. Therefore, MC3T3-E1 cell line is used, which is a mouse preosteoblast cell line so later it can be continued with in vitro tests and clinical trials. **Methods:** Nanohydroxyapatite synthesized from fish scales (Batan, Indonesia) was applied to preosteoblast cell culture MC3T3-E1 with different concentrations of 200 µg / ml, 100 µg / ml and 5 µg / ml then incubated for 24 hours. Then the viability was measured using the MTT assay (Bioassay). The value of cell viability was reported as a percentage compared to control cell cultures that were not given hydroxyapatite application. **Results:** The mean value of preosteoblast cell viability decreased along with the decrease in the concentration of fish scales nanohydroxyapatite application. The results of the Kruskal Wallis statistical test showed no significant difference between groups including the control group ($p > 0.05$). **Conclusion:** The results of the viability test of fish bone scales nanohydroxyapatite against preosteoblast cell line MC3T3-E1 showed good biocompatibility and were not toxic.

Keywords: Nanohydroxyapatite, Fish Scales, Biocompatibility, Preosteoblast

Effectiveness of Chewing Manalagi Apple (Malus sylvestris Mill) on Increasing Salivary pH After Consuming Chocolate

Edina Hartami[1]*, Difa Shabirina Ardi[2]

[1] Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: edina.hartami@ub.ac.id

ABSTRACT

Introduction: The main factor in maintaining the balance of tooth demineralization and remineralization is salivary pH. pH can drop to below 5.5 after consuming foods that are high sugar and sticky like chocolate. Salivary pH can return normal due to the buffer system that is affected by salivary secretion. Manalagi apple contain vitamin C which can increase salivary secretion. The aim of this study was to determine the effectiveness of chewing Manalagi apple (Malus Sylvestris Mill) on increasing salivary pH after consuming chocolate **Methods:** Sample of this study was 32 students SDN Rampal Celaket 1 Malang who were divided into 2 groups consisting of 1 treatment group and 1 control group. The treatment group consumed 10 grams chocolate and chewed 50 grams Manalagi apple, while the control group consumed only 10 grams chocolate. Then salivary pH measurements were carried out at 5, 10, 15 and 20 minutes with digital pH meter. The results were analyzed using Independent T-test. **Results:** Based on the Independent T-test, the significanct difference was $p < 0.05$ at minutes 5, 10, and 15 between treatment group and control group. **Conclusion:** Chewing Manalagi apple (Malus Sylvestris Mill) effective on increasing salivary pH after consuming chocolate.

Keywords: Chewing, Manalagi apple, Salivary pH, Chocolate

The Differences of Age Estimation between Al Qahtani and Blenkin and Taylor Methods in Deutro Malay Race Patients of Brawijaya University Hospital (RSUB)

Farihah Septina[1]*, Arlin Rieska Rahsyaputri[2]

[1] Department of Radiology, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: Farihahseptina@ub.ac.id

ABSTRACT

Introduction: The age estimation method plays an important role in the forensic field for victim identification in cases of mass disasters or in cases of falsifying personal data. Teeth are used in the identification process and have an advantages including resistance to physical trauma, thermal, decomposition and predict the age from prenatal to adulthood. Methods: Atlas method is used in this method, because most easy and not destructive is the atlas method. The purpose of this study was to determine whether there were differences in estimated age between the Al Qahtani method and the Blenkin and Taylor method in the deutro malay race, dental patients attending the Universitas Brawijaya hospital. The test sample was made up from medical records and panoramic radiograph of dental patients aged 6-12 years with total number 60 samples (30 males and 30 females). Panoramic radiographs of patients were compared with the atlas in each method to get the estimated age. Results: The results of the Paired T-Test showed no significant difference in age estimation between the Al Qahtani method and the Blenkin and Taylor method ($p > 0.05$). Conclusion: The conclusion of this study is that there is no significant difference in age estimation between the Al Qahtani method and the Blenkin and Taylor method.

Keywords: Age estimation, Al Qahtani method, Blenkin and Taylor method, Deutro malay race

Rambutan-Honey Pharmaceutical Grade as Potential Antioxidant: Inhibit Oxidized Saliva Malondialdehyde Formation

Euis Reni Yuslianti[1]*, Afifah B.Sutjiatmo[2], Ratna Trisusanti[1], Bima Diaz Candra[1]

[1] Dentistry Education Program, Faculty of Medicine, Jenderal Achmad Yani University, Cimahi 40285, Indonesia
[2] Faculty of Pharmacy, Jenderal Achmad Yani university, Cimahi 40285, Indonesia

*Corresponding author: ery.unjani@yahoo.co.id

ABSTRACT

Introduction: Free radicals can cause damage to the body and one of them can be generated from the reaction of lipid oxidation in saliva which is oxidized by CuCl2. This lipid oxidation can be determined indirectly by measuring the levels of malondialdehyde (MDA). Rambutan-honey has antioxidant phenolic substances, rutin flavonoids, ascorbic acid/vitamin C, carotenoid-like substances, enzymes (glucose oxidase, catalase, peroxide), and organic acids. The objectives of this research are to investigate flavonoid compound in rambutan-honey pharmaceutical grade (RHPG on saliva MDA inhibition (in vitro). **Methods:** In vitro samples were the unstimulated saliva of healthy individuals who do not drink alcohol, smoke, and do not take drugs. The samples divided into negative control (NC) contains normal saliva, positive control (CuCl2) contains CuCl2 oxidized saliva, (RHPG) contains oxidized saliva and rambutan-honey pharmaceutical grade, antioxidant standard (Vit C) contains vitamin C oxidized saliva, and flavonoid antioxidant standard (Rutin) contain rutin tryhidrat. Free radicals (MDA) determined by TBARs-assay, and statistically analyzed (ANOVA,Tukeys, $p<0.05$). **Results:** Showed that rambutan-honey pharmaceutical grade can inhibit saliva malondialdehyde formation significantly ($p=0.000$) with mean 0.024±0.0041µmol/L(NC), 0.11±0.01µmol/L (CuCl2), 0.051±0.0031µmol/L(RHPG), 0,064±0.0046µmol/L(Vit C), 0,042±0.001µmol/L(Rutin). RHPG have same potential activity with rutin flavonoid to reduce free radical in oxidized saliva ($p=0.074$). **Conclusion:** The present study showed that rambutan-honey pharmaceutical grade contains rutin flavonoid and vitamin C. Thus, rutin flavonoids could be considered as potential antioxidants in rambutan honey that can inhibit free radicals (MDA) formation in oxidized saliva.

Keywords: Antioxidant, Honey, Saliva malondialdehyde

Dental Anxiety Differences Compared to Cooperative Behavior Level of Elementary Students on UKGS Activities in Malang Regency and Malang City

Trining Widodorini*, Yully Endang Hernani M, Merlya

Department of Preventive Dental Public Health, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: mvtriningw@gmail.com

ABSTRACT

Introduction: Dental anxiety is a psychological disorder that can affect the quality of dental and oral health and will make the experience for further treatment. Student behavior is adjusted to the attitude of students who are cooperative to facilitate the dentist in performing dental and oral care. The purpose of this research is to know the difference and the relation between dental anxiety toward behavioral level of elementary school student at UKGS activity in Malang Regency and Malang City. **Methods:** The design of this study is an analytical survey with a cross-sectional approach. Dental anxiety gauge uses Facial Image Scale (FIS) forms and student cooperative behavior levels using the Frankl Behavior Rating Scale. **Results:** The result of Spearman correlation statistic analysis at Elementary School of Malang Regency and Malang City is p = 0,000, (p <0,05) so that there is significant relation between dental anxiety with cooperative level of student behavior, correlation value of Elementary School of Malang Regency (r = - 0,439) anxiety of students, the lower level of cooperative students with moderate correlation strength, while the correlation Elementary School of Malang City (r = - 0.338) shows the greater the level of student anxiety, the lower the level of cooperative students with weak correlation strength. Mann Whitney statistical analysis results for dental anxiety level obtained with p = 0,2595, (p> 0,05) so that level of dental anxiety is relatively same between student of Elementary School of Malang Regency and Malang City only difference in correlation strength. **Conclusion:** Student behavior level of Elementary School of Malang Regencyt more cooperative than student of Elementary School of Malang City.

Keywords: Dental Anxiety, Level of Cooperative Behavior

Antimicrobial Efficacy of Acemannan as Root Canal Irrigants Against *Enterococcus faecalis*

Yuli Nugraeni[1]*, Kristina Puspo[2]

[1] Department of Conservative Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: yulinugraeni@ub.ac.id

ABSTRACT

Introduction: *Enterococcus faecalis* is one of anaerob facultative bacteria that usually resistants after root canal treatment. The prevalence of root canal treatment failure due to *Enterococcus faecalis* ranging from 24-77%. The use of acemannan in dentistry was developed several years. Acemannan is polysaccharides isolated from Aloe vera gel and is structured of a long chain of acetylated mannose. Acemannan has anti-inflammatory, antibacterial, antiviral and anticancer. The purpose of this study is to know antimicrobial efficacy of acemannan against *Enterococcus faecalis*. **Methods:** This research was laboratory experimental study. Acemannan that used in this research is acemannan powder that dissolved with aquadest. The concentration of acemannan solution that used in this study were 200 µg/ml, 250 µg/ml, 300 µg/ml, 400 µg/ml, 500 µg/ml. The positive control was given 5.25% Sodium hypochlorite (NaOCl) and the negative control was given aquadest. This acemannan solution, positive control and negative control were examined in *Enterococcus faecalis* ATCC 29212 with experimental methods are serial dilution and plate streaking. The data was analyzed using statistical approach Kruskal Wallis Test and Spearman Corellation. **Results:** The result showed there is significant ($p \leq 0.05$) differences of bacteria growth was given acemannan solution and was given aquadest. The increasing concentration of acemannan followed by the decreasing in bacterial growth significantly ($p \leq 0.05$). The concentration of acemannan solution inhibit bacteria growth significantly on 300 µg/ml and eradicate on 400 µg/ml. **Conclusion:** The *Enterococcus faecalis* growth was decreasing significantly after administrated by acemannan.

Keywords: Acemannan, Antimicrobial, Enteroccocus faecalis, Root Canal Irrigant

The Pore Size Difference of Nanohydroxyapatite/PVA and Nanohydroxyapatite/PVA/PLGA Composites as Scaffold Candidate for Bonegraft

Lalita El Milla[1]*, Feni Istikharoh[1], Farah Mida Salsabila[2]

[1] Department of Material Science of Dentistry, Faculty of Dentistry, Brawijaya University,mMalang 65145, Indonesia
[2] Faculty of Dentistry, Brawijaya University, Malang 65145, Indonesia

*Corresponding author: Lalita.fk@ub.ac.id

ABSTRACT

Introduction: Scaffold is one of the alternative material in repairing bone tissue. As a place for new cells attachment and growth, this matrix must be made of biodegradable material that is capable being metabolized by the body. Hydroxyapatite can be used to improve scaffold bioactive properties. Brittle hydroxyapatite which is low in porosity and biomechanics can be synthesized into nanohydroxyapatite so can be more quickly absorbed. To form scaffolds with composite pore sizes, the polymeric materials addition such as PVA and PLGA can be used because of their biocompatibility. The purpose of this research was to analyze the differences pore size of nanohydroxyapatite/PVA and nanohydroxyapatite/PVA/PLGA composites as scaffold. **Methods:** There are four types of samples used; nHA/PVA, nHA/PVA/PLGA 10%, nHA/PVA/PLGA 20% and nHA/PVA/PLGA 30%. The pore size of all samples was measured by Image-J software from image and oxidized composition data of the SEM. Oneway anova test results obtained significant value of 0.004 which means that there're differences between the four samples. **Results:** All samples could be synthesized. nHA/PVA composite obtained pore size average of 64.1µm. Whereas on nHA/PVA/PLGA composites of 10%, 20%, and 30%, each average pore sizes are 20.87 µm, 65.69 µm, and 31.16 µm respectively. **Conclusion:** It can be seen that nanohydroxyapatite/PVA composites are larger when mixed with PLGA. nHA/PVA/PLGA composites can be used as scaffold candidate for bonegraft but improvement is still needed to reach the optimum scaffold pore size.

Keywords: Bonegraft, Nanohydroxyapatite, PLGA, Scaffold

The Green Tea Effect on Nanohybrid and Nanofilled Bulk-Fill Composite Resin Colour Stability

Hanin Fairuz Salsabila[1]*, Tri Endra Untara[2], Yulita Kristanti[2], Andina Widyastuti[2]

[1] Dentistry Study Program, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta, Indonesia
[2] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta, Indonesia

*Corresponding author: haninfairuz@yahoo.co.id

ABSTRACT

Introduction: Technology advancement and patients' awareness in aesthetic needs have increased the demand of teeth restoration material that fulfills good aesthetic and mechanical properties. Nanohybrid and nanofilled packable bulk-fill composite resin are novel nanotechnology restoration materials. Nevertheless, it still has the ability to absorb water through diffusion process into its matrix, resulting in discoloration of restoration. Green tea has tannin and phenolic acid that may cause brownish-yellow staining. This study has investigated the difference of green tea effect in causing discoloration on nanohybrid and nanofilled bulk- fill composite resin. **Methods:** This study used fourteen samples of disc-shaped nanohybrid and nanofilled packable bulk-fill composite with 6 mm diameter and 4 mm depth in size. The samples were divided into two groups, with each group consisted of seven samples of each composite. Samples were immersed and incubated in artificial saliva for 24 hours in 37°C temperature. Initial colour measurement was done using chromameter according to CIE L*a*b system. Samples were immersed and incubated in green tea solution for 24 hours in 37oC temperature. Final colour measurement was done using chromameter according to CIE L*a*b. Data result of colour changes (ΔE) were calculated and analyzed using independent t test. **Results:** Independent t test result showed significance value of 0.878 ($p > 0.05$), which showed that there was no difference in discoloration yielded by nanohybrid and nanofilled bulk-fill composite resin. **Conclusion:** This study showed that there was no difference in green tea effect on discoloration of nanohybrid and nanofilled bulk-fill composite resin.

Keywords: Bulk-fill composite resin, Nanohybrid, Nanofilled, Green tea, Discoloration

Comparison of *Jatropha multifida* L Gel and Aloe Vera Gel to The Number of Blood Vessels Post Gingivectomy

Khusnul Munika Listari[1]* Amalia Hasanah[2]

[1] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: khusnul.fk@ub.ac.id

ABSTRACT

Introduction: Gingivectomy is a periodontal surgical treatment for the treatment of enlarged gingiva that often occurs in daily practice. Currently herbal plants have great potential in the wound healing process. Alkaloids, flavonoids, saponins and tannins are the active ingredients of *Jatropha Multifida* L Gel potentially to accelerate wound healing. Aloe Vera with its active ingredient such as saponin, tannin, flavonoid and acetylated mannan have been widely used in wound healing. The aim of this study is to investigate the number of blood vessels after application of *Jatropha Multifida* L gel compared with aloe vera gel in wound healing process post gingivectomy in Wistar rats (Rattus Novergicus). Methods : Sample grouped into 4 groups that is group K (aloe vera gel), T1 (*Jatropha Multifida* L gel 2,5%), T2 (*Jatropha Multifida* L gel 5%) and T3 (*Jatropha Multifida* L gel 10%). Each group was given the gel twice a day in the wound area then the wound was observed microscopically by Haematoxylin Eosin staining to count the number of blood vessel on the third and seventh days. Results: Based on the ANOVA test, obtained $p > 0.005$ showed there is no significant difference on the number of blood vessels in each group Conclusion: *Jatropha Multifida* L gel has the same potential as Aloe Vera gel in accelerating the process of wound healing after gingivectomy in wistar rats with parameter the number of blood vessels.

Keywords: *Jatropha Multifida* L Gel,Aloe vera gel, Blood vessels, Gingivectomy

Total Colony of *Streptococcus mutans* in Asthmatic Children With Feeding Probiotics *Lactobacillus reuteri*

Nydia Hanan[1], Teguh Budi Wibowo[2], FX. Suhariadji[2]

[1] Profession Program of Dentistry, Faculty of Medicine, Mulawarman University, Samarinda, Indonesia
[2] Department of Pediatric Dentistry, Airlangga University, Surabaya, Indonesia

*Corresponding author: nydiahanan@fk.unmul.ac.id

ABSTRACT

Introduction: Some oral health conditions are often associated with asthmatic children. One of them is the increasing incidence of dental caries as well as a decrease in saliva production, is also a change in the conditions of the oral cavity is very likely to lead to the formation of dental caries. **Methods:** This study involved fourteen subjects between the age 9-12 years old, seven asthmatic children and seven non-asthmatic children (control group). Plaque of subjects were taken and then counted the colonies. After taking the plaque, the sample was asked to take a probiotic tablet twice daily after meals. This is done for 2 weeks. Counting the number of colonies of *Streptococcus mutans* by colony counters before and after administration of probiotic lozenges for children with asthma group and the control group. **Results:** The mean for the number of *Streptococcus mutans* before administration of probiotics in asthmatic children that is $23.71x10^4$ CFU / ml and after the administration of probiotics $10.14x10^4$ CFU / ml. Whereas in the control group (non-asthmatic), the amount of *Streptococcus mutans* before administering probiotics is $14.29 x10^4$ CFU / ml and after the administration of probiotics $9.43x10^4$ CFU / ml. **Conclusion:** Lactobacillus reuteri probiotic lozenges can reduce the number of *Streptococcus mutans* in the oral cavity of asthmatic children.

Keywords: Total colony, *Streptococcus mutans*, *Lactobacillus reuteri* probiotic, Asthmatic children

Effect of Oxalic Acid Cucumber Tree Gel to Brightness of Tooth Color in Rabbits

Asih Rahaju[1]*, Daswara Djajasasmita[2], Euis Reni Yuslianti[1], Fikri Alatas[3]

[1] Dental Study Program, Faculty of Medicine , University Jenderal Achmad Yani, Jalan Terusan Jenderal Gatot Subroto, Cimahi, West Java, Indonesia
[2] Department of Physiology, Faculty of Medicine, University Jenderal Achmad Yani, Jalan Terusan Jenderal Gatot Subroto, Cimahi, West Java, Indonesia
[3] Faculty of Pharmacy, University Jenderal Achmad Yani, Jalan Terusan Jenderal Gatot Subroto, Cimahi, West Java, Indonesia

*Corresponding author: asihrahaju69@gmail.com

ABSTRACT

Introduction: Tooth discoloration can effect the smile and self confidence. This encourages an increase in aesthetic care needs in the field of dentistry. Discoloration on teeth can be removed by dentist with a dental bleaching procedure. The coronavirus pandemic is changing the way we access dental care. Non essential dental care is now postponed, so treatment such as whitening will have to wait. The material for dental bleaching certainly has side effects such as reducing the amount of calcium, phosphate, and fluoride in enamel, which will reduce enamel hardness, cause enamel surface roughness and cause tooth hypersensitivity. Cucumber tree contain oxalic acid which is potential as herbal whitening tooth. The purpose of this study was to determine the effect of oxalic acid cucumber tree extract gel in increasing the brightness of tooth color in vivo in rabbits. **Methods:** This study used an analytical experimental method, with a sample of 27 rabbit incisors or as many as 27 rabbits, then divided into 3 groups namely 50% cucumber tree gel group, 40% oxalic acid gel, negative control group. Previous rabbit incisors were coated with transparent varnish in the specific area. Exposure to the use of bleaching material is carried out for 4 hours within 14 days. Color measurement is done using the Dino-Lite which will be converted by MATLAB. Data were analyzed statistically by One way ANOVA followed by NSK post-hoc test ($p < 0.05$). **Results:**The results of this studied shows that the cucumber tree extract gel caused an increase in the degree brightness of tooth color ($p = 0,0030$). **Conclusion:** It can be concluded that oxalic acid cucumber tree extract gel has an effect on increasing the degree of brightness of the tooth color.

Keywords: Dental bleaching, tooth color, cucumber tree

Acute Toxicity Test of Katuk Leaves Ethanol Extract as A Natural Products for Orthodontic Treatment

Hillda Herawati[1], Euis Reni Yuslianti[1]*, Fahrauk Faramayuda[2], Velia Putri Ahtayary[1]

[1] Dentistry Education Program, Faculty of Medicine, Universitas Jenderal Achmad Yani, Cimahi, 40285, Indonesia
[2] Faculty of Pharmacy, Universitas Jenderal Achmad Yani, Cimahi, 40285, Indonesia

*Corresponding author: ery.unjani@yahoo.co.id

ABSTRACT

Introduction: Katuk leaves (*Sauropus androgynus* (L.) Merr.) is a plant that well known to the society because it has many benefits, including facilitating breastfeeding, overcoming anemia, maintaining healthy bones, and others. Katuk leaves can be used as antidiabetic, antioxidant, antimicrobial, antiobesity, antianemia, analgesic, and anti-inflammatory. The composition of katuk leaves, which is rich of antioxidants and flavonoids, can increase the number of osteoblasts and reduce the number of osteoclasts so that it has a good effect on stabilizing the results of orthodontic treatment. The objectives of this research are to determine the acute toxicity of katuk leaves administered orally. **Methods:** The samples 24 male and 24 female mice (*Mus musculus*) divided into 4 groups of variations dosage of 1250 mg/BW, 2500 mg/BW, 5000 mg/BW, and negative control group. Animals were observed for mortality, body weight changes, toxicity symptoms, and relative organ weight for the next 14 days and analyzed using ANOVA test ($p<0.05$). All mice performed surgery, weighing, and observation of heart, lung, liver, kidney, and spleen (relative organ weight). **Results:** Katuk leaves did not exhibit any abnormal signs or deaths. There was no significant increase in body weight in male mice $p=0.755$ and female mice $p=0.192$. There were no toxicity symptoms in male and female mice. Relative organ weight by gross necropsy analysis did not reveal changes of heart, lung, liver, kidney, and spleen organs. **Conclusion:** Katuk leaves oral administration were safe and practically non-toxic on male and female mice. Thus this finding important for katuk leaves on orthodontic research.

Keywords: Acute toxicity test, Katuk leaves, Ethanol extract

The Effect of Papaya Seed 96% Ethanol Extract Nanoliposome Towards The Amount of Neutrophils

Yuli Nugraeni[1]*, Arfaza Zuqni Elfahma[2]

[1] Department of Concervative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: yulinugraeni@ub.ac.id

ABSTRACT

Introduction: One of the chronic inflammatory diseases of the oral cavity that has the highest prevalence in Indonesia is periodontitis which caused by the *Porphyromonas gingivalis*. One of the ingredient that can be used as herbal medicine to treat Periodontitis is from papaya seed (*Carica papaya* L.) which contains flavonoid and phenol used as an anti-inflammatory. Extract of papaya seed has not been widely studied in dentistry as an anti-inflammatory to treat periodontitis. To determine the effect of the ethanol extract of papaya seed nanoliposome towards the amount of neutrophils in the Sprague Dawley rat diabetic periodontitis model. **Methods:** This study used a sample of 36 white Sprague Dawley rats that had been induced by P. gingivalis LPS in the gingival sulcus. The research group was divided into nine groups consisting of control group, the group that had been treated with papaya seed 96% ethanol extract, and papaya seed 96% extract nanoliposome, each group has three time series; the third day, the seventh day, and the fourteenth day. The data obtained was performed one-way ANOVA test. **Results:** Based on the ANOVA test, $p < 0.005$ showed the difference between the control group and the treatment group. The lowest mean of neutrophils is in the group given doses 400mg/kg BB orally and 0,03 ml topically papaya seed 96% extract nanoliposome. **Conclusion:** There was reduction in the amount of neutrophils after being given papaya seed 96% extract nanoliposome in Sprague Dawley rat.

Keywords: Periodontitis, Neutrophil, Nanoliposome, *Carica papaya* L.

Effect of Papaya Seeds Extract Nanoliposomes on Macrophages and Osteoclasts of Diabetic Periodontitis Rats

Ratih Pusporini[1]*, Khusnul Munika Listari[2], Yuli Nugraeni[3], Lukman Hakim Hidayat[4], Elizabeth Maria Elizabeth Indriyani Togu Ito[5], Angelia Safitri[5]

[1] Department of Oral Biology, Faculty of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[2] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[3] Department of Concervative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[4] Department of Oral Medicine, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia,
[5] Dentistry Study Program, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: ratih.fk@ub.ac.id

ABSTRACT

Introduction: Periodontitis is the most common complication in diabetes mellitus sufferers with a prevalence rate of up to 75%. The previous study proved that papaya seeds extract can inhibit the osteoclastogenesis process. Nevertheless, generally natural compounds have scarce water solubility, and inappropriate molecular size. The modification of the drug delivery system can optimize the therapeutic effect, such as nanoliposome. The research objective is to evaluate the effect of papaya seeds extract nanoliposome on osteoclast and macrophages number in the diabetic periodontitis animal model. **Methods:** This study used a sample of 36 rats Sprague Dawley and divided into 3 groups with the time series days 3, 7, and 14. The groups were K groups (rats induced diabetic periodontitis-no treatment), P1 groups (rats induced diabetic periodontitis-administered papaya seeds extract), P2 groups (rats induced diabetic periodontitis-administered nanoliposomes papaya seeds extract). Both the extract and nanoliposomes were administered orally 0.5 ml and locally 0.03 ml on sulcus. The rats were sacrificed on day 4, 8, and 15. The macrophages and osteoclasts counted by HE stained. The data obtained was performed by One Way ANOVA and Post Hoc test. **Results:** The ANOVA test showed that group P1 and group P2 on the third day had an average number of macrophages decreased compared to the control group. There was a significant difference ($p < 0.05$) of osteoclasts between all groups on the day 7 and 14, meanwhile there was no significant difference between groups P1 and P2 on osteoclasts and macrophages number on day 3 based on the Post Hoc test ($p > 0.05$). **Conclusion:** The administration of papaya seed extract nanoliposome can decrease the macrophages and osteoclasts number, but there was no significant difference between the nanoliposome and papaya seeds extract.

Keywords: Nanoliposome, Diabetes, Periodontitis, Osteoclasts, Machrophages

Acemannan and Probiotic to Inhibit Quorum Sensing Streptococcus Mutans Biofilm

Yuli Nugraeni[1]*, Wibi Riawan[2], Yuliana R Kumala[1], Chandra Sari Kurniawati[1], Rahmavidyanti Priyanto[1]

[1] Department of Operative Dentistry and Endodontic, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[2] Laboratory of Molecular Biochemistry, Faculty of Medicine, Universitas Brawijaya, Malang, 65145, Indonesia

*Corresponding author: yulinugraeni@ub.ac.id

ABSTRACT

Introduction: Dental caries is the one of serious problem in Indonesia. Dental caries caused by the host (teeth and saliva), substrate (food), the causative microorganism and time. The nature and composition of microorganism of any individual impact to the general health that contribute to the oral health as well. Recently, the probiotics become a new strategy for prevent the caries, and besides oral diseases as a whole. Nowadays, the use of probiotic effect in decreasing risk of caries or periodontal diseases. Acemannan, is known as bioactive of aloe vera that contains polysaccharide has many effect such as an antibacterial, anti-inflammatory and healing property. This aim of this study is to investigate the use of acemannan and probiotics to prevent caries through inhibit the *S.mutans* biofilm. **Methods:** The research was a post-test randomized controlled group design. The sub-gingiva of incisors in the upper jaw of rats were treated. There were three groups, the first group were control group, second group were administered by S. mutans and third group were added Acemannan with probiotic (*Bifidobacterium*). After treatment, each group was divided into three treatment groups based on time of exposure; at days 1,3,7,and 14. After the treatment, rats were sacrificed, the application of acemannan was added to probiotic. Therefore, the biofilm factor, histidine kinase and AIP were analyzed using cyto9 then assessed through immunohistochemistry. Groups and time mean differences in expression statistically were examined by one-way ANOVA, Tukey-HSD, Pearson-Correlation. **Results:** The results of this study showed that the expression of histidine kinase and AIP were decreasing significantly ($p \leq 0.05$) and the expression of cyto9 was decreasing significantly ($p \leq 0.05$) as well. **Conclusion:** Acemannan and probiotic have the potential to decrease the expression of histidine kinase, AIP and Cyto9 of S.mutans in sulcus gingiva of Wistar rat teeth.

Keywords: Acemannan, Probiotic (*Bifidobacterium*), histidine kinase, AIP, cyto9

Serial Cases of Oromaxillofacial Odontogenic Infection Management in COVID-19 Pandemic

Zefry Zainal Abidin*

Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: : Zefry.fk@ub.ac.id

ABSTRACT

Introduction: Odontogenic infection in the oral and maxillofacial area is a life-threatening emergency case in dentistry because of impending airway obstruction. The clinical sign of abscess are febris, shortness of breath, and changes in complete blood count. COVID-19 is an infectious disease, and all kinds of treatment, including emergency, need a particular precaution. **Methods:** all odontogenic infection cases in the oral and maxillofacial area from march up to October 2020 at Wava Husada Hospital, Malang are collected, then analyzed to determine the incidences number. **Results:** 13 treated cases consist of four in the woman (31%) and 9 in men (69%). Screening and scoring for COVID-19 are done resulting in 61,5% of patients are positive and need complete blood count, COVID-19 rapid test, and chest X-ray for further inspection. 38% of cases are phlegmon on the floor of the mouth, and 11,1% cases are facial cellulitis, infection is caused mostly by posterior mandibular teeth (92,3%). The surgical approach is made in 61.5% of patients, and 38.5% is treated using non-operative management. 62.5% of surgery is done under general anesthesia and 37.5% using local anesthesia. **Conclusion:** Complete and careful management for a patient with infection in the oral and maxillofacial area, especially in the COVID-19 pandemic. A multidisciplinary approach is needed during pre-, durante, and post-operative treatment if the patients show COVID-19 sign.

Keywords: Odontogenic infection, Abscess, Emergency, Pandemic, Covid-19

Acceleration of Skin Wound Healing Through Angiogenesis Enhancement by Snail Mucus Gel (*In Vivo* Study)

Yosaphat Bayu Rosanto[1]*, Cahya Yustisa Hasan[1], Rahardjo[1], Tri Wahyu Pangestiningsih[2]

[1] Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universitas Gadjah Mada, Yogyakarta 55281, Indonesi
[2] Department of Anatomy, Faculty of Veterinary Medicine, Universitas Gadjah Mada, Yogyakarta 55281, Indonesia

*Corresponding author: yosaphatbr@ugm.ac.id

ABSTRACT

Introduction: Angiogenesis is an important process in wound healing because it plays a role in the supply of nutrients and oxygen to cells in the wound area. Snail mucus contains glycosaminoglycans, heparan sulfate, heparin sulfate, and hyaluronic acid which can directly affect cells and growth factors in angiogenesis. This report aims to examine the effect of snail slime gel (Achatina fulica) in promoting angiogenesis in wound healing processes. **Methods:** Snail slime is extracted by electric shock method to stimulate mucus excretion. The research subjects were 9 male Wistar rats. Each mouse was made 4 wounds on its back with a punch biopsy with a diameter of 5 mm. The study was conducted by applying snail mucus gel with concentrations of 96%, 48%, and 24% in excision wounds with punch biopsy on the skin of Wistar rats. Angiogenesis was observed in the dermis under a microscope with 400x magnificancy. **Results:** Two-way ANOVA statistical analysis showed differences in the amount of angiogenesis between each group and the length of day of observation. The post hoc test showed that snail mucus with a concentration of 24% had no significant effect, however snail mucus with concentration of 48% and 96% had significant effect on the angiogenesis. **Conclusion:** Topical application of snail slime gel can increase the amount of angiogenesis in wound healing of Wistar rat skin biopsy. This research shows that snail mucus is a potential and promising material to be developed into a drug to speed up the wound healing process.

Keywords: New vessels, Hematoxillin eosin, CMC-Na, Glycosaminoglycans, Heparan sulfate

Antioxidant Evaluation of *Stachytarpheta jamaicensis* Root Extract Against Red Blood Cell (*In Vitro* Study)

Juliyatin Putri Utami[1]*, Yusrinie Wasiaturrahmah[2]

[1] Department of Biomedic, Faculty of Dentistry Universitas Lambung Mangkurat, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Lambung Mangkurat, Indonesia

*Corresponding author: juliyatin.utami@ulm.ac.id

ABSTRACT

Introduction: Periodontitis is a manifestation of periodontal tissue infection due to bacterial exposure to dental plaque. Periodontal infections contain toxins (both from bacteria and inflammatory responses) that cause tissue damage. An increase in reactive oxygen species (ROS) will occur during the inflammatory phase. *S. jamaecensis* root contains flavonoids, saponins, tannins, phenols and terpenoids which can be potential as antioxidants to prevent tissue damage. It aimed to determine the *in vitro* antioxidant activity of *S. jamaicensis* root ethanol extract on red blood cells. **Methods:** Laboratory experimental (true experimental) with the design of the post test only control group design. Extraction of *S. jamaecensis* root using maceration method with 96% ethanol solvent. Furthermore, the antioxidant test was carried out using the hydroxyl radical scavenger technique on rat red blood cells. The extract concentrations were varied, namely 125, 250, 500 and 1000 ppm. The data obtained was performed one-way ANOVA test. **Results:** The results obtained were significant values from the antioxidant test with the antiradical scavenger method, the largest average value of root extract was 60.606 at a concentration of 1000 ppm. **Conclusion:** there is an antioxidant effect of ethanol extract of *S. jamaecensis* root extract on red blood cells at the highest concentration of 1000 ppm.

Keywords: Antioxidant, Periodontitis, Reactive oxygen species, Radical scavenger

Proliferation of Human Fetal Osteoblastic Cell Line After the Administration of Demineralized Freeze-dried Bone Bovine Xenograft Nanoparticle

Ariyati Retno Pratiwi[1]*, Feni Istikharoh[2], Zefry Zainal Abidin[3]

[1] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[2] Department of Dental Material, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[3] Department of Oral Maxillofacial Surgery, Faculty of Dentistry, Universitas Brawijaya, 65145, Malang, East Java, Indonesia

*Corresponding author: ariyatiretnop@ub.ac.id

ABSTRACT

Introduction: The use of bonegrafts as regenerative materials is expected to have osteoinduction, osteoconduction, and osteogenic properties. Demineralized Freeze-Dried Bovine Bone Xenograft Nanoparticles are bonegrafts produced from the demineralization process of cow bones, leaving organic components containing growth factors such as BMP. The ideal scaffold should have good compatibility, biodegradable, and not toxic to cells. For this reason, it is necessary to observe the effect of the xenograft on cell viability. This study to was to determine the cell proliferation of Human Fetal Osteoblastic Cell Line after the administration of Demineralized Freeze-Dried Bone Bovine Xenograft Nanoparticle. **Methods:** This research was an experimental study. Demineralized Freeze-dried Bone Bovine Xenograft Nanoparticle (DFDBBX-NPs) was extracted from Bovine. The effect of DFDBBX-NPs on the cell proliferation of hFOb for 24 hours at concentration 2 mg/ml and 4 mg/ml analyzed by means of MTT Assay (3-4,5'dimethylihiazol-2-yl,2.5-di-phenyl-tetrazolium bromide). The results obtained were then analyzed by an ANOVA to establish the difference between the groups. **Results:** The highest cell proliferation (181,84%) was found in hFOB at a concentration of 4 mg/ml compared to those at concentrations of 2 mg/ml (62%). **Conclusion:** The study showed that DFDBBX-NPs derived from bovine promoted of human fetal osteoblastic growth.

Keywords: Proliferation, Human Fetal Osteoblastic Cell Line, Demineralized Freeze-Dried Bone Bovine Xenograft, Nanoparticle, MTT Assay

The Effect of Wetland Water on the Prevalence of Early Childhood Caries

Gina Elmawati[1], Khairunnisa Amalia Pratami[1], Renie Kumala Dewi[2]*, Isnur Hatta[3]

[1] Dentistry Education Program, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin, Indonesia
[2] Department of Pediatric Dentistry, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin, Indonesia
[3] Department of Dental Public Health, Faculty of Dentistry Lambung Mangkurat University, Banjarmasin, Indonesia

*Corresponding author: renie.dewi@ulm.ac.id

ABSTRACT

Introduction: Wetlands are swamps with soil structures producing water with an acidity of pH 3.5 - 4.5. Most of the children living in wetlands still use of wetland water for mouth-rinsing and tooth-brushing. *Clostridium sp, Bacillus sp*, and *Streptococcus* are bacteria found in wetland water. Streptococcusis able to survive and produce acid and play a role in the Early Childhood Caries (ECC). This study mainly focused on the effect of using wetlands water when mouth-rinsing and tooth-brushing on the prevalence of ECC children living in wetlands. **Methods:** Observational analytic with cross-sectional approach and cluster random sampling method were used. 187 research subjects consisting of mothers and children aged 3-5 years were enrolled in this study. The children's oral cavity were examined for early childhood caries type I, II, and III, while mothers were required to fill a questionnaire on the use of wetland water for tooth-brushing and mouth-rinsing. **Results:** Variable were analyzed using the spearment test. The data showed that type I ECC (21.93%), type II ECC (43.85%), and type III ECC (34.22%) occurred in children that used wetland water for mouth-rinsing. While on children that used wetland water for bathe and mouth-rinsing, the prevalence rate reached 72,2%. **Conclusion:** The use of wetland water for tooth-brushing and mouth-rinsing can affect the prevalence of Early childhood caries on children living in wetlands.

Keywords: Early Childhood Caries, Wetlands, Brushing

Safety of Diabetes Mellitus Rat Kidney Model in Using Toman Fish Extract

Amy Nindia Carabelly[1]*, Udur Sinaga[2], Nurdiana Dewi[3]

[1] Department of Pathology, Oral and Maxillofacial, Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin 70236, Indonesia
[2] Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin 70236, Indonesia
[3] Department of Pediatric Dentistry, Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin 70236, Indonesia

*Corresponding author: acarabelly@gmail.com

ABSTRACT

Introduction: Traditional medicine has low side effects when the dose is right, but many people do not pay attention to the dosage in the use of traditional medicine. Excessive doses can harm the kidneys. People who use traditional medicine are diabetes mellitus sufferers. Diabetes mellitus can cause delayed wound healing. Toman fish is proven to accelerate wound healing. Traditional medicine needs to be considered for its safety, one of which is for the kidney. The safety of toman fish extract against the kidneys can be seen through the histopathological picture of glomerular hypertrophy and hydropic degeneration in the kidney. Therefore, it is necessary to test the safety of giving toman fish extract against the kidney of diabetes mellitus rat model. **Methods:** This research is a true experimental design with a post test only with control group design. The study was divided into a treatment group toman fish extract dose 16 mL/KgBW orally and a control group in feeding only for 14 days in diabetic rat kidney models. **Results:** There was a significant difference in the glomerular hypertrophy picture of diabetic rats between the two groups based on the percentage score of lesion area from entire field of view. In the control group showed glomerular hypertrophy with a score of 3 which means there was glomerular hypertrophy covering >50%, and in the treatment group showed glomerular hypertrophy with a score of 2 which means there was glomerular hypertrophy covering 25-50%. There was no description of hydropic degeneration in the two groups. **Conclusion:** The administration of toman fish extract dose 16 mL/KgBW orally for 14 days is safe against the kidneys because it does not cause hydropic degeneration, and able to reduce the renal glomerular hypertrophy score of diabetes mellitus model rats.

Keywords: Albumin, Antioxidant, Hydropic degeneration, Glomerular hyperthrophy, Toman fish extract

Association Between Obesity and Periodontal Disease as Stated by CPITN Index

Novi Khila Firani[1,2,3], Kurnia Putri Alvianti[4]*, Khusnul Munika Listari[5]

[1] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[2] Clinical Pathology Department, Faculty of Medicine, Universitas Brawijaya, Malang, 65145, Indonesia
[3] Biochemistry and Biomolecular Department, Faculty of Medicine, Universitas Brawijaya, Malang, 65145, Indonesia
[4] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[5] Periodontia Department, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia

*Corresponding author: kurnia.putrial@gmail.com

ABSTRACT

Introduction: Obesity is a global health problem with an increasing trend every year. Obesity is being overweight due to the accumulation of excess fat which has the risk of causing various complications of systemic diseases, and it is also thought to cause periodontal problems. This study aims to investigate the relationship between obesity and periodontal disease. **Methods:** It was an analytic observational study with a cross sectional approach to patients at Janti Health Center, Malang City, from August to November 2019. There were 107 obese and non obese research subjects (21 male and 86 female), who were willing to participate in this study. The criteria for obesity according to WHO-WPR was body mass index ≥25 kg/m^2. All of the patients performed the community periodontal index of treatment needs (CPITN). The exclusion criteria were patients with systemic disease, smoking, using prostheses and orthodontic appliances, pregnancy, breastfeeding, salivary gland disorders, poor oral hygiene, and taking drugs. Statistical analysis used chi-square and Spearman's correlation test. **Results:** There was a significant difference (p=0.002) in the severity of the CPITN score between obese and non-obese patients. Spearman's correlation test showed that there was a significant positive correlation (p<0.05) between obesity and the CPITN score. **Conclusion:** Obesity correlated with periodontal disease as shown by an increase in the CPITN score.

Keywords: CPITN, Obesity, Periodontal disease, Body mass index

The Antifungal Effectivity Test of Ethanolic Extract of Kidney Bean (*Phaseolus vulgaris* L.) Against *Candida albicans* Using *In Vitro* Method

Lukman Hakim Hidayat[1], Risa Dwi Fitriani[2]*

[1] Department of Oral Medicine, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia

*Corresponding author: risadwifitriani@gmail.com

ABSTRACT

Introduction: *Candida albicans* can causes an infection called candidiasis. Kidney beans (*Phaseolus vulgaris* L.) are natural products that contain several active compounds such as saponins, flavonoids, tannins, and coumarins that can damage the membrane and cell wall of *Candida albicans*. **Methods:** The design of this study used true experimental post control design only with the tube dilution method. Extract concentrations used were 3200 mg/ml, 3600 mg/ml, 4000 mg/ml, 4400 mg/ml, 4800 mg/ml, 5200 mg/ml, 5600 mg/ml, and 6000 mg/ml. This study used a negative control (extract 0%) and a positive control (Nystatin 1%), each of which was added with *Candida albicans*. **Results:** The results showed that the Minimum Inhibitory Concentration (MIC) was obtained at 5200 mg/ml and the Minimum Bactericidal Concentration (MBC) was obtained at 6000 mg/ml. One Way ANOVA statistical test results showed a significant difference (significance value 0,000; $p < 0.05$). Pearson correlation test showed the direction of the negative correlation ($r = -0.945$; $p < 0.01$). The ability of ethanolic extract of kidney bean to inhibit growth and kill the *Candida albicans* is due to the active compounds contained in it, namely flavonoids, saponins, tannins, and coumarin. Flavonoids can cause protein denaturation. Saponins have the ability to kill *Candida albicans* by forming pores in the double lipidic layer that results on the loss of cell integrity. Tannins have the ability to inhibit fungal growth by inhibiting the synthesis of chitin and damaging cell membranes. Coumarins can cause fungal death by interfering with cell wall synthesis. **Conclusions:** The conclusion of this research is the ethanol extract of kidney bean can inhibit at the concentration of 5200 mg/ml and kill the growth of *Candida albicans* at the concentration of 6000 mg/ml.

Keywords: *Candida albicans*, Ethanol Extract of Kidney Beans, Antifungal, Tube Dilution Method

Effectivity Test Of Ethanolic Extract Of Green Bean Sprouts (*Vigna Radiata*) As Antifungal Against *Candida Albicans* Using *In Vitro* Method

Lukman Hakim Hidayat[1], Naufal Fadhli Hardickdo[2]*

[1] Department of Oral Medicine, Faculty of Dentistry, Brawijaya University, Veteran 1, Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Brawijaya University, Veteran 1, Malang, Indonesia

*Corresponding author: naufal.fadhli90@gmail.com

ABSTRACT

Introduction: Oral candidiasis is an opportunistic infection of the oral cavity caused by *Candida albicans*. However treatments using currently available drugs can cause side effects. Therefore another alternative is needed such as Green Bean Sprouts (Vigna radiata). This plant has active substances in the form of flavonoids and phenols which can damage the cell wall of *Candida albicans*. **Methods:** This research was a true experimental post control design only using the tube dilution method. Extract concentration used in this study were 9000 mg/ml, 8400 mg/ml, 7800 mg/ml, 7200 mg/ml, 6600 mg/ml, 6000 mg/ml, 5400 mg/ml, and 4800 mg/ml. This study uses a negative control (extract concentration of 0%) and positive control (nystatin 1%), which each of them added with *Candida albicans*. **Results:** The results showed that the Minimum Bactericidal Concentration (MBC) was obtained at 9000 mg/ml. Data analysis using the Kruskal-Wallis test with $\alpha = 0.05$ showed significant results (significance value 0,000; $p < 0.05$) and the Spearman correlation test showed a negative correlation direction ($r = -0.990$; $p < 0.01$) which meant the higher the concentration of the extract used, the fewer colonies of *Candida albicans* formed. Green bean sprouts extract can inhibit the growth of *Candida albicans* because it has active ingredients in the form of flavonoids and phenols. Flavonoids have lipophilic properties. Phenols have the ability to inhibit fungal activity by denaturing proteins in the cell walls. **Conclusion:** The conclusion of this research is the ethanol extract of green bean sprout extract can kill the growth of *Candida albicans* with a concentration of 9000 mg/ml.

Keywords: Antifungal, *Candida albicans*, Ethanol Extract of Green Bean Sprouts, Tube Dilution Method

Increase Number Of Angiogenesis Post Tooth Extraction After The Administration Of *Jatropha curcas* L Extract Nanospraygel

Mochamad Nur Fadilah[1]*,Ferdian Adi Rizki[2], Viola Ayu Puspitasari[3], Vita Novianti[2]

[1] Dentist in Klinik Rawat Inap Nusantara, Kepanjen, Malang, Jawa Timur, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[3] Dentist in Klinik Rawat Jalan Rampal, Malang, Jawa Timur, Indonesia

*Corresponding author: mochamadfadil932@gmail.com

ABSTRACT

Introduction: Tooth extraction is a common procedure in dentistry and always resulting in wound formation. Accelerating wound healing can be done by increasing number of angiogenesis on wound site. *Jatropha curcas* L contains saponins, flavonoids, and tannins that could accelerate wound healing. Saponins in *Jatropha curcas* L extract has the ability to promote new cell regenerations, by inducing multiplication and growth of vascular endotels, vascular smooth muscles, and fibroblasts, which increase angiogenesis. The spray gel was made in nanosize to prolong contact time on wound socket, accelerating its penetration, and minimalizing contamination. The purpose of this research is to determine the effect of *Jatropha curcas* L extract nanospraygel on increase number of angiogenesis on tooth extraction socket. **Methods:** 24 male wistar rats were divided into 4 groups consisting of one positive control group and three treatment groups. The mandibular incisor were extracted under anesthesia. The treatment groups were given 10% *Jatropha curcas* L sap extract nanospraygel and observed for three, five, and seven days. On eighth day, the socket tissues were taken and histologic preparations were made to investigate the number of angiogenesis. The data was analyzed using One Way Anova test and continued with Post Hoc test. **Results:** Based on ANOVA test, obtained $p<0.005$ that showed there were significant difference between all groups. Post Hoc test between positive control group and three days treatment group showed no significant difference, meanwhile Post Hoc test between positive control group and both five and seven days treatment groups showed significant difference ($p<0.005$). **Conclusion:** There was an increase number of angiogenesis post tooth extraction after the administration of J*atropha curcas* L extract nanospraygel.

Keywords: Extraction, Angiogenesis, Nanotechnology, *Jatropha curcas* L.

The Effect Of Eggshell Powder on Osteocyte in Alveolar Bone Defect Healing

Sari Kurniawati[1]*, Retty Ratnawati[2], Diena Fuadiyah[3], Rudhanton Sidharta[4], Viranda Sutanti[3], Astika Swastirani[5], Jesica Christi[6], Raissa Giovanni[6], Yulia Pertiwi[6], Indira Indah Farahdiba[6], Lyvia Christie[6]

[1] Department of Orthodontics, Faculty of Dentistry Universitas Brawijaya, Malang, 65145, Indonesia
[2] Department of Physiology, Faculty of Medicine Universitas Brawijaya, Malang, 65145, Indonesia
[3] Department of Oral Biology, Faculty of Dentistry Universitas Brawijaya, Malang, 65145, Indonesia
[4] Department of Periodontology, Faculty of Dentistry Universitas Brawijaya, Malang, 65145, Indonesia
[5] Department of Oral Medicine, Faculty of Dentistry Universitas Brawijaya, Malang, 65145, Indonesia
[6] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia

*Corresponding author: sarikurnia.ort@gmail.com

ABSTRACT

Introduction: Bone damage is a challenge in dental practice. Osteocyte is the orchestrator of bone remodeling. It regulates the recruitment and differentiation of osteoclast and osteoblast activity, and also performs the signaling in the bone remodeling process. Calcium carbonate is an organic mineral in the bone matrix with an ability to increase bone density. About 94% of chicken eggshell is calcium carbonate. Calcium supplementation can increase the formation of trabeculae and induce the mineralization and proliferation of osteoblast into osteoid and osteocyte. **Methods:** Thirty Wistar rats were divided into 3 groups: Negative Control (C-), Experimental 1 (E1) with bone defects only, Experimental 2 (E2) with bone defects and daily oral administration of eggshell powder (± 2 grams) for 42 days. Alveolar bone defects were induced by low speed round bur on the buccal side of left mandibular diastema. Mandibular samples were processed as hematoxylin-eosin (HE) preparations. Osteocyte cells were counted and analyzed. **Results:** One-way ANOVA Test showed a significant influence between the E2 and C- group, E1 group had fewer osteocytes and an insignificant difference with E2. Discussion: The inflammatory process from bone defect as well as the increased mineralization of osteoblasts from the eggshell powder in E2 group has caused the increase of osteocyte counts. Whereas C- group were not given any treatment and had no additional increase of osteocytes. **Conclusion:** Eggshell powder can increase the number of osteocyte in the alveolar bone defect healing process.

Keywords: Alveolar Bone Loss, Calcium Carbonate, Osteocyte

Nanoliposome Papaya Seed Extract Increased the Number of Osteoblast in Diabetic Periodontitis Rat

Khusnul Munika Listari[1], Ratih Pusporini[2], Yuli Nugraeni[3], Lukman Hakim Hidayat[4], Vitha Dwi Festari[5]

[1] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[3] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[4] Department of Oral Medicine Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia
[5] Program Study Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang, 65145, Indonesia

*Corresponding author: vithadwif@gmail.com

ABSTRACT

Introduction: Periodontitis is a multifactorial disease that causes inflammation of the periodontal tissues. Chronic periodontitis are caused mostly by *Porphyromonas gingivalis*, it cause various complications including making worse the diabetes mellitus while diabetes mellitus leads to worsening of periodontal disease. Herbal plants are used as an alternative treatment for example papaya seeds (*Carica papaya* linn). Nanoliposome papaya seed extract contains active compounds such as quercetin which have anti-inflammatory effect and potentially increase osteoblast cell. Nanoliposomes has the advantage of being protective in drug delivery to the alveolar bone against in the osteogenesis process. The Purpose of this research is to investigate the effect of nanoliposome papaya seed extract on the number of osteoblasts in the osteogenesis process of diabetic periodontitis rats. **Methods:** This study used a sample of 36 rats Sprague dawley was divided into 3 groups with time series days 3, 7 and 14. Each group namely K groups (rat induced diabetic periodontitis Without treatment), P1 groups (rat induced diabetic periodontitis given 96% papaya seed extract) and P2 groups (rat induced diabetic periodontitis given 96% Nanoliposome papaya seed extract). The extract was given orally 0.5 ml and drop as much as 0.03 ml on the gingival sulcus once a day. The osteoblast was counted by HE staining. The data obtained was performed by One Way ANOVA test and Post Hoc test. **Results:** Based on the One Way ANOVA test on day 14 showed there is a significance difference ($p<0.05$) between each group on the number of osteoblast. Post Hoc test on day 14 showed the difference in the P2 group compared with K/P1 group ($p<0.05$). **Conclusion:** Nanoliposome papaya seed extract can increase the number of osteoblast in the osteogenesis process on rat induced diabetic periodontitis.

Keywords: Diabetes Mellitus , Nanoliposome Papaya Seed Extract, Osteoblast, Periodontitis

Osseointegration and Survival Rate of Bisphosphonate Coated Implants: A Systematic Review and Meta-analysis

Nurani Atikasari[1]*, Deddy D. Septian[2], Kartika A. Wulan[3]

[1] Biomedical Student, Universitas Brawijaya, Malang 65145, Indonesia
[2] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[3] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: atikasarinurani@gmail.com

ABSTRACT

Introduction: Marginal bone loss (MBL) is one of the criteria to determine dental implant success. Continuous MBL can affect dental implant stability, and loss of osseointegration will occur. Bisphosphonate is an effective inhibitor for normal bone resorption, therefore nowadays dental implants has been suggested to be coated with bisphosphonate in order to prolonged preservation of marginal bone which eventually be able to enhance osseointegration and increase survival rate. The purpose of this systematic review and meta-analysis is to analyze the effect of bisphosphonate-coated dental implants on the osseointegration and survival rate of dental implants. **Methods:** Three electronic database : PubMed, Google Scholar, Science Direct are used for identifying Randomized Controlled Trials (RCT) studies that evaluated marginal bone loss, implant stability, and survival rate of bisphosphonate coated implants until October 2020. **Results:** Five studies fulfilled the inclusion criteria for qualitative synthesis, and two were further included in the meta-analysis with 64 total samples. Groups that received bisphosphonate-coated dental implants had a higher survival rate compared to groups that received non-coating dental implants (95% CI, P= 0.0004, Z= 3.54). Heterogeneity test using i^2 test resulted in 33% heterogeneity, P = 0.22 by X^2 test. **Conclusion:** Within the limitation of this systematic review and meta-analysis, bisphosphonate-coated dental implants can decrease marginal bone loss around dental implants, which will improve the osseointegration and prolonged the survival rate of dental implants.

Keywords: Bisphosphonate Coated Dental Implants, Marginal Bone Loss, Survival Rate, Osseointegration

Systematic Review and Meta-analysis of Radix Entomolaris Incidence in Asia-Pacific

Valonia Irene Nugraheni[1]*, Amanda Andika Sari[2], Deddy Dwi Septian[3], Yuliana Ratna Kumala[4]

[1] Postgraduate Student, Department of Conservative Dentistry, University of Indonesia, DKI Jakarta, Indonesia
[2] General Dental Practitioner, Medical and Dental Care, Malang, East Java, Indonesia
[3] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia
[4] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, Indonesia

*Corresponding author: valoniairene@gmail.com

ABSTRACT

Introduction: The presence of undetected radix entomolaris could be one of the reasons that cause endodontic failure. Clinicians need to understand the necessary facts to do a successful endodontic treatment and do a thorough informed consent before the endodontic procedure. This research aims to evaluate the incidence of radix entomolaris in mandibular molars in the Asia Pacific population. **Methods:** A literature search was performed using Google Scholar, Cochrane, and PubMed from any period. Studies reporting mandibular molars with radix entomolaris based on the population's country of origin in the Asia Pacific region, gender, and type of molars were included. Comprehensive Meta-analysis V.3 was used to do the data calculation. Our search yielded 29 studies of the Asia Pacific population. **Results:** We found that Japan has the highest incidence rate (25.89%) of radix entomolaris than the other countries in the Asia Pacific. There is no significant difference in the incidence of radix entomolaris in the first mandibular molar than the second mandibular molar (95% CI, $P < 0.05$). In comparison, the odds of radix entomolaris in mandibular molars in the female is significantly higher than male (95% CI, $P < 0.05$). RE is more commonly found in specific populations such as Japan. This phenomenon is caused by hereditary, which has more influence to activate specific genes, rather than a developmental variation. **Conclusion:** In the Asia Pacific region, especially amongst Japan's population, radix entomolaris can easily be found. Clinicians need proper knowledge to do a successful endodontic treatment and educate their patients about the risk of treatment failure caused by RE, which is related to the patient's country of origin and gender. Thus a thorough informed consent could be achieved.

Keywords: Radix entomolaris, Asia Pacific, Meta-analysis, Systematic review

Sublingual Varices in Relation to Hypertension Patients in Universitas Airlangga Dental Hospital

Ari Hapsari Tri Wardani[1]*, Adiastuti Endah P.[2], Hening Tuti Hendarti[2]

[1] Oral Medicine Specialistic Programme, Faculty of Dental Medicine, Universitas Airlangga, Jl. Mayjen Prof. Dr. Moestopo No 47, Surabaya, Indonesia, 60132
[2] Department of Oral Medicine, Faculty of Dental Medicine, Universitas Airlangga, Jl. Mayjen Prof. Dr. Moestopo No 47, Surabaya, Indonesia, 60132

*Corresponding author: ari.hapsari.tri-2019@fkg.unair.ac.id

ABSTRACT

Introduction: Sublingual varices are a common benign clinical finding which is clinically characterized by dilated small veins under the lateral border of the tongue, particularly in an aging population. The pathogenesis may be due to a change in the connective tissue or weakening of the venous wall. It is as a result of degeneration of elastic fibers related to the aging process. The varicosity is thought to be a developmental abnormality and not associated with any systemic disease states. However, several studies suggest a relationship between sublingual varices and systemic diseases, especially hypertension. Generally, these lesions are found during a routine examination of the oral cavity and could be a valuable method for the dental profession to take active part in preventive healthcare. Therefore, the purpose of this study is to determine sublingual varices in relation to hypertension patients coming to the Universitas Airlangga Dental Hospital. **Methods:** By using a retrospective study examining a total of 90 cases of sublingual varices record files, who attended the Dental Hospital of Universitas Airlangga during the period between January until mid-December 2019. The record files are included a civil status, chief complaint, medical history, social behavioral, and intraoral clinical examination. **Result:** Among 90 cases of sublingual varices' found, there were 20 cases of sublingual varices that had related to hypertension. **Conclusion:** In this study, sublingual varices probably related to hypertension.

Keywords: Sublingual varices, Hypertension, Oral lesion, Tongue

The Potential Use of Blood Cockle Shells' (*Anadara granosa*) as an Abrasive Material for Polishing Heat Cured Acrylic Resin Denture Base

Kartika Andari Wulan[1]*, Fatima1, Citra Insany Irgananda[1], Lalita El Milla[2], Kartika Dewi Nuringtyas[3]

[1] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Dental Material, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: kandariwulan@ub.ac.id

ABSTRACT

Introduction: Blood Cockle Shell/BCS (*A.granosa*) contain a high percentage of calcium carbonate (98,99%) needed in abrasive agent for polishing heat-cured acrylic resin (HCAR) denture base. It also have the potential in decreasing the risk of silicosis compare to pumice due to its low percentage of silica. In order to qualify as an abrasive agent, its should have a higher value of hardness than the material needed to be polish. The purpose of this study was to determine the microhardness of BCS to qualified as an abrasive agent for polishing HCAR denture base. **Methods:** Vickers microhardness of twenty seven BCS's prepared samples (5x5x3 mm) were measured and divided into three groups with various indentation loads applied (G1:25 gf; G2:50 gf; G3:100gf). Each samples received three indentations loaded perpendicular on the nacreous structures of the shells for 15 s. Their average values were calculated using the equations for Vickers microhardness (HV). **Results:** Indentation load had significant effects in decreasing the hardness values of BCS as it shown in group 3 (100 gf; HV 148,40). However, in group 1 (25 gf; HV 280,40) showed no significant difference compared to the group 2 (50 gf; HV 247,27). **Conclusions:** The hardness value of BCS found to be much more higher than HCAR denture base (HV 18,57) thus BCS were considered qualified as as an abrasive agent for polishing HCAR denture base.

Keywords: Microhardness, Blood cockle shells, Abrasive agents, Denture base polishing.

The Differences Between Heat-Cured Acrylic Resin Denture Base Surface Roughness Polished by Pumice and Ground Blood Cockle Shells (*Anadara granosa*)

Kartika Andari Wulan[1]*, Citra Insany Irgananda[1], Lalita El Milla[2], Salsabila Shelvie Widianisma[3]

[1] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Dental Material, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: kandariwulan@ub.ac.id

ABSTRACT

Introduction: Mechanical polishing techniques using pumice known for many years to be effective in decreasing surface roughness of HCAR denture base. However, its procedures exhibit silica dust and caused silicosis. Blood cockle shell/BCS (*A.granosa*) contain 98,99% calcium carbonate and its hardness value found to be much higher than HCAR thus have the potential as an abrasive agents and lower the risk of silicosis due to its minimum content of silica. The purpose of this study was to compare the surface roughness between HCAR denture base polished by pumice and ground BCS (*A.granosa*). **Methods:** Ground BCS (A.granosa) were prepared and characterized using PSA, FTIR and XRD. Twenty four HCAR plates (10x10x2.5 mm); which divided into four groups: G1 (control group) polished by commercial pumice (PSA 115 μm); experimental group polished by ground BCS: G2 (PSA 131μm), G3 (PSA 106 μm), G4 (PSA 89 μm); were polished for 120 s, applied 25 gr pressured load and set the speed of polishing machine in 1500 rpm. Its surface roughness were measured by profilometer. **Results:** Both of abrasive agents used for mechanical polishing has affected HCAR surface roughness, but the significant differences was between HCAR polished by pumice (G1) and ground BCS (G3) ($p<0.04$). G3 had the lowest surface roughness compared to G1, G2, G4. However, the surface roughness value of G3 (0.4185 μm) still exceeded the threshold value (0.2 μm) of standart denture base surface roughness. **Conclusion:** Ground BCS (A.granosa) was effective as an abrasive agents for polishing HCAR denture base due to its ability in decreasing the surface roughness.

Keywords: Abrasive agents, Blood cockle shells, Acrylic resin polishing, Surface roughness

Does Ground Blood Cockle Shells's (*Anadara granosa*) Particle Size Effects the Surface Roughness of Heat-cured Acrylic Resin Denture Base?

Kartika Andari Wulan[1]*, Citra Insany Irgananda[1], Lalita El Milla[2], Meiliansuri Bunga Avisha[3]

[1] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Dental Material, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: kandariwulan@ub.ac.id

ABSTRACT

Introduction: Rough surfaces ofheat-cured acrylic resin (HCAR) denture base must be polished to prevent adhesion of plaque and bacteria. Pumice is widely used as an abrasive agent for polishing but during the procedures, pumice produced silica dust which can cause silicosis. High percentage of calcium carbonate (98,99%) in blood cockle shell/ BCS (A.granosa) and its higher hardness value than HCAR made it potential to be a new abrasive agents and preventing silicosis.The purpose of this study was to determine the surface roughness (Ra) of HCAR denture base polished by pumice and ground BCS (A.granosa) in various particle sizes. Methods: Ground BCS (A.granosa) were prepared and characterized using PSA, FTIR and XRD. Twenty four HCAR plates (10x10x2,5 mm); which divided into four groups: control group (G1) polished by pumice; experimental group polished by ground BCS: G2 (coarse; PSA 139µm), G3 (medium; PSA 89 µm), G4 (fine;PSA 0.7 µm); were polished for 120 s, applied 500 gr pressured load and set the polishing machine speed in 330 rpm then measured by profilometer. Results: There was a significant difference between HCAR surface roughness polished by pumice (G1) and ground BCS (G2 G3 G4) ($p<0,025$). Nevertheless, G4 (fine; PSA 0.7 µm) had the lowest Ra value (0.1138 µm) which below the threshold value (0.2 µm) of standart denture base surface roughness. Conclusions: Particle sizes of ground BCS (A.granosa) had a significant effect in decreasing the surface roughness of HCAR denture base. Fine particle size of ground BCS were the most effective with surface roughness found below the threshold value.

Keywords: Abrasive agents, Blood cockle shells, Acrylic resin polishing, Surface roughness

In Vitro Assessment of Fibroblast Cell Viability towards Isotonic Solutions

Kusuma W[1], Endang Asmaningsih[2], Irwan Baga[3]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Oral-Maxillo Surgery, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: drg.baga@yahoo.com

ABSTRACT

Introduction: In avulsed teeth, the storage medium should be suitable for maintaining the periodontal ligament cells alive. Fibroblasts are the cell responsible for preserving the tissue. This study aims to determine which of isotonic solutions are the most potential storage medium for fibroblast cells. **Methods:** This study was an in vitro experimental study using BKH (Baby Hamster Kidney) fibroblasts. Cell culture divided into four groups, namely I, II, III, were the treatment group with storage media of Ringer's lactate, Oral rehydtayion Solution, and isotonic drinks, respectively, and IV as the control group. Cells were incubated for 24 hours in a storage medium before being tested using MTT Assay. **Results:** It found that the percent of cell viability were: group I 94.02%, group II 91.14%, and group III 54.97%. Based on the Posthoc Tukey analysis showed that no significant difference between group I and group II, but both groups significantly different compared to group III. **Conclusion:** Ringer's lactate and Oral rehydration solutions are potential as a storage medium for maintaining fibroblast cell viability.

Keywords: Isotonic solutions, Fibroblast, MTT- assay

Effect of *Carica papaya* L Fruit Juice on Fibroblast Number in The Rat After Gingivectomy

Anta Seri Kamaiswara[1], Khusnul Munika Lestari[2]*, Setyawati Soeharto[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Pharmacology, Faculty of Medicine, Universitas Brawijaya, Malang 65144, East Java, Indonesia

*Corresponding author: khusnulmunika@gmail.com

ABSTRACT

Introduction: A gingivectomy is one of the dental procedures for treating periodontal diseases. Fibroblasts are the cells that have an essential role in wound healing. Papaya (*Carica papaya* L) contains flavonoids, a bioactive compound used in traditional medicine as a wound-healing agent. The study aimed to explore papaya fruit juice on the number of fibroblasts in Wistar rat after gingivectomy treatment. **Methods:** Thirty- male Wistar rats had been subjected to gingivectomies in mandibular incisive, divided into eight groups, including two positive control groups and six groups, treated fruit papaya juice. Papaya fruit is given in doses of 60%, 80%, and 100%, respectively, each 2ml orally three times a day, for 3 and 5 days after a gingivectomy. The assessment of fibroblasts used Hematoxylin-Eosin stained tissue. **Results:** Based on Tukey's posthoc analysis, there were significant differences between all groups. The correlation test results showed a positive relationship between dose and the number of fibroblasts in each time series. **Conclusion:** Papaya fruit juice can increase the fibroblast number in rats after a gingivectomy.

Keywords: Gingivectomy, Fibroblast, Papaya fruit (*Carica papaya* L.)

The Difference Satisfaction Level of Removable Partial Denture Wearer between Male Patient and Female Patient

Andini Widiastari[1], Diwya Nugrahini[2]*, Citra Insany Irgananda[2]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Prostodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: ipehprosto.fk@ub.ac.id

ABSTRACT

Introduction: Loss of teeth will disrupt teeth's function. Removable partial denture use to improve the function of mastication, esthetics, and phonetics. Improvement of the three functions will be achieved if the denture design according to patient's comfortability and satisfaction. Patient satisfaction was influenced by socio-demographics factors which one of them is gender. The aim of research was to analyze the difference satisfaction level of removable partial denture wearer among gender in University Brawijaya Education Hospital. **Methods:** The research type was analitic survey with purposive sampling. The research was done through filling out the questionnaire. Total 48 patients agree to join. Analysis of data using *Mann-Whitney test*. **Results:** The study showed male patients satisfaction based on mastication aspect were 25% very satisfied and 75% satisfied; esthetics aspect was 100% very satisfied; and phonetics aspect are 87.5% very satisfied and 12.5% satisfied. While female patients satisfaction based on mastication aspect are 62,5% very satisfied, 33,33% satisfied, and 4,17% less satisfied; esthetics aspect are 37,5% very satisfied, 58,33% satisfied, and 4.17% less satisfied; and phonetics aspect are 58.33% very satisfied, 29.17% satisfied, dan 12.50% less satisfied. There were significant difference satisfaction level between male and female patients based on mastication, esthetics and phonetics aspect with $p<0.05$. **Conclusion:** Male and female patients relatively satisfied. There was a difference of satisfaction level which female patients more satisfied on mastication aspect and male patients more satisfied on esthetics and phonetics aspects.

Keywords: Removable partial denture, Patient satisfaction, Gender

Patient's Level of Satisfaction of Masticatory Function Using Fixed Bridge

Dini Amalia[1], Diwya Nugrahini[2]*, Fatima[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Prostodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: ipehprosto.fk@ub.ac.id

ABSTRACT

Introduction: Fixed Bridge is a restoration designed to replace one or more missing teeth. Fixed Bridge used to improve the masticatory function and also esthetics function. Masticatory function of fixed bridge is one of the factor that can influence patient satisfaction. Patient satisfaction is the overall of patient's attitude toward the service they expect with what they receive. The purpose of this study was to determine the patient's level of satisfaction of masticatory function using dental bridge based on gender. **Methods:** The required information for this cross-sectional was collected from patients in Universitas Brawijaya Education Hospital, using a self-answered questionnaire. The The questionnaire was consist of 15 items with five-point likert scale (strongly agree, agree, neither, disagree and strongly disagree) to evaluate the level of patient satisfaction. Total score was categorized in three (satisfied, neutral and not satisfied). The sampling technique was using purposive sampling. **Results:** The result of patient's level of satisfaction of masticatory function using dental bridge in patients showed that 2% of the total subjects were neutral and 98% were satisfied. The woman was 96% satisfied and the man 100% satisfied. **Conclusion:** Most of the respondents were satisfied in masticatory function after wearing fixed bridge.

Keywords: Fixed bridge, Patient satisfaction, Masticatory function

Needs, Complexities and Success Level of Treatment Using Removable Orthodontic Appliances according to Index of Complexity, Outcome and Need (ICON) in *RSP UB*

Karina Fedela Putri[1], Kuni Ridha Andini[2], Neny Roeswahjuni[2]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Orthodontic, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: nenyroes@yahoo.co.id

ABSTRACT

Introduction: Malocclusion is one of oral health problems which can cause disruption of the function of chewing, speech and esthetics. One of malocclusion treatment is to use removable orthodontic appliances. Performing orthodontic treatment requires assessment index, one of which is Index of Complexity, Outcome and Need (ICON) malocclusion index. This study aimed to analyze the needs, complexities and success level of orthodontic treatmentusing removable orthodontic appliances in *Rumah Sakit Pendidikan Universitas Brawijaya (RSP UB)*. The variables were qualified using five components of ICON index, specifically: esthetics, anterior vertical relationships, upper arch crowding/diastema, crossbite, anterior vertical relation, and also anteroposterior relation buccal segment. **Method:** This study used observational analytics research with cross sectional approach. The samples were drawn from 34 patients using removable orthodontic appliances in whom each patient provides five models: one was initial model studies and four models of control progress. Each control progress was after six weeks treatment. **Results:** The patients requiring treatment in the beginning prior to treatment up to the fourth control progress shown in percentage consecutively were 85.3%, 79.4%, 55.9%, 29.4% and 23.5%. Complexitiesin the beginning prior to treatment was dominated by moderate category amounting 41.2% and decreases significantly up to the fourth control which the complexities is dominated by mild category of complexity amounting 58.8%. **Conclusion:** The successful treatment showed a significant value from the second up to fourth control. The worse/not improved category decreases and another categories increase significantly.

Keywords: Index of Complexities Outcome and Need, Malocclusion, Removable Orthodontic Appliances, Orthodontic Treatment

The Effect of Mixture Gel of Ethanol Extract Leaves of Aloe Vera (*Aloe barbadensis miller*) and Snail Mucus (*Achatina fulica*) to The Epithelium Thickness In Traumatic Ulcer Healing Process of Labial Mucosal White Rat (*Rattus norvegicus*)

Silvia Desy Permatasari[1], Nenny Prasetyaningrum[2]*, Miftakhul Cahyati[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Oral Medicine, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: nennyprasetyaningrum@ymail.com

ABSTRACT

Introduction: Traumatic Ulcer is soft tiissue lesion in oral cavity that often founded. Triamcinolone acetonide 0,1% dental pasteis topical corticosteroid which usually used for treatment ulcer, but long-term use may cause hypersensitivity. Mixture gel of ethanol extract leaves of aloe vera (*Aloe barbadensis miller*) and mucus snail (*Achatina fulica*) contains *acemannan, glucomannan*, saponin, flavonoid and heparan sulphate that can improve accelerate ulcer healing process. **Methods:** The type of this study was experimental research and using Post Test Only Randomized Control Group Design in order to understanding the effect of mixture gel of ethanol extract leaves of aloe vera (*Aloe barbadensis miller*) and snail mucus (*Achatina fulica*) to the epithelial thickness in traumatic ulcer healing process of labial mucosal white rat (*Rattus norvegicus*). The samples were divided into 9 groups with 3 time series, which is the untreated group (K (-)), the group was applied *Triamcinolone acetonide* 0.1% (K (+)), and the group was applied the mixture gel of ethanol extract of leaves of aloe vera (*Aloe barbadensis miller*) and mucus snail (*Achatina fulica*) (P). Samples were selected using Simple Random Sampling Technique. Variable studied was epithelial thickness labial mucosal white rat (*Rattus norvegicus*) tissues from HPA preparation with HE staining. **Results:** One way ANOVA test showed a significant differences of the epithelial thickness between groups. The result of the average showed treated group day 7 had the highest epithelial thickness than control groups and have a significant differences in Post-hoc Tukey test that is $p<0,05$. **Conclusion:** mixture gel of ethanol extract leaves of aloe vera (*Aloe barbadensis miller*) and snail mucus (*Achatina fulica*) takes effect to the epithelial thickness in traumatic ulcer healing process of labial mucosal white rat (*Rattus norvegicus*).

Keywords: *Aloe barbadensis miller, Achatina fulica*, Epithelial Thickness, Ulcer

Orthodontic Treatment Need of 8-12 Years Old Patients Using Index Of Orthodontic Treatment Need (IOTN)

Wiwin Nuril Falah[1], Neny Roeswahjuni[2]*, Kuni Ridha Andini[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Orthodontic, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: nenyroes@yahoo.co.id

ABSTRACT

Introduction: Malocclusion is a state of deviated occlusion caused by incompatibility between size of dental arch with size of jaw arch. The need of orthodontic treatment aimed to omitting unarranged teeth sequence, correcting teeth's rotational and apical deviation, correcting initial relationship between teeth to shape a good occlusion. Measurement baseline for malocclusion as known as malocclusion index, is needed. One of the common used index is Index of Orthodontic Treatment Need (IOTN). The aim of this study was to determining the needs of orthodontic treatment for 8-12 years old patient in Universitas Brawijaya Education Hospital using IOTN index that consists of two components: Dental Health Component (DHC) and Aesthetic Component (AC). **Method:** The study was cross-sectional approach with purposive sampling using 75 initial study model before treated. **Results:** Based on DHC component, biggest percentage of orthodontic treatment need was medium treatment (41.3%). Based on AC component, biggest percentage of orthodontic treatment need was adequate treatment (57.3%). Spearman Correlation Test showed there was no difference between orthodontic treatment need determine with DHC and AC component from IOTN ($p>0.05$). **Conclusion:** DHC and AC had similar result in detecting the needs of orthodontic treatment.

Keywords: Malocclusion, Orthodontic treatment, Index of Orthodontic Treatment Need, Dental Health Component

Effect of Aloe Vera Gel in CD8* Lymphocyte in Rats Periodontal Tissue Post Tooth Replantation

Andiani Budi Lestari[1], Delvi Fitriani[2]*, Yuliana Ratna Kumala[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Dental Material, Faculty of Dentisry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: delfifitriani@yahoo.com

ABSTRACT

Introduction: The dental detachment of the socket due to avulsion causes periodontal tissue inflammation. CD8+ T-cells which act as proinflammatory found in periodontal lesions. *Aloe vera* cream stimulated skin wound healing through its ability to increased CD4+ and decreased CD8+ lymphocytes. The study aimed to explore the effect of *aloe vera* gel on the number of CD8+lymphocyte in rats periodontal tissue post tooth replantation. **Methods:** Twenty-four male rats received replantation treatment after the incisors were removed, then divided into a positive control groups (3 groups) and treatment groups with *aloe vera* gel (3 groups). *Aloe vera* gel is applied to the tooth socket at a dose of 2mg / ml before the tooth replanted. Periodontal tissue was taken for IHC stain against CD8+ lymphocytes in the day 1.3 and 7 after tooth replantation. **Results:** Based on the post-hoc Tukey statistical tests showed that the number of CD8+ lymphocyte in the aloe vera gel treatment groups at that time series was less than the control groups, with a significant difference ($p < 0.05$). **Conclusion:** Aloe vera gel decrease CD8+ in rats periodontal tissue post tooth replantation

Keywords: CD8+ lymphocyte, Aloe Vera, Tooth Replantation

In vitro Antibacterial Activity of Methanolic Extract of *Myrmecodia pendans* against *Streptococcus mutans*

Ajeng Rizki Dwihantari[1], Sri Winarsih[2], Dini Rachmawati[3]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Microbiology, Faculty of Medicine, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: dinipdgub@yahoo.com

ABSTRACT

Introduction: *Streptococcus mutans* is a gram-positive bacteria that can cause oral infection. *Myrmecodia pendans* (Ant Plants) have some ingredients that assumed as anti-bacterial compounds such as flavonoid, tannin, polyphenol, terpenoid, and tocopherol. The objective of the study was to prove the anti-bacterial effect of methanolic extract of Ant Plants (SAP) towards *Streptococcus mutans*. **Methods:** The method of tube dilution used to determine the minimum inhibitory concentration (MIC), and the minimum bactericidal concentration (MBC). The MEAP concentrations of 2%, 2.5%, 3%, 3.5%,4%, 5% (v/v) was added to Streptococcus mutans suspension /10^6 (CFU/ml), respectively. **Results:** The MEAP had MIC at a concentration of 3.5% v/v, and MBC at the concentration of 5% v/v. There was a positive correlation between the dose of MEAP and bacterial colony (r = 0.888). **Conclusion:** The methanolic extract of *Myrmecodia pendans* has an anti-bacterial action against *Streptococcus mutans*.

Keywords: *Myrmecodia pendans*, Anti-bacterial action, *Streptococcus mutans*

Effect Of Ethanol Extract Gel *Artocarpus altilis*'s Leaf to Increase The Sum of Vascularity On Oral Mucose of *Rattus norvegicus* After Gingivectomy

Ilham Maulana[1], Nenny Praseyaningrum[2]*, Eviana Norahmawati[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Departmen of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Departmen of Pathology Anatomy, Faculty of Medicine, Universitas Brawijaya, Malang 65144, East Java, Indonesia

*Corresponding author: nennyprasetyaningrum@ymail.com

ABSTRACT

Introduction: Gingival enlargement is increasing of gingival connecting tissues in submucose. Treatment for this case is gingivectomy. The leaf of *Artocarpus altilis* contain a compound called flavonoid, the function of it as antioxydant and free radicals – scavenging of Reactive Oxygen Species (ROS). ROS able to decrease angiogenesis therefore hampered the wound healing. This research is done to know the effect of ethanol extract gel *Artocarpus altilis*'s leaf to increase the sum of vascularity on oral mucose of *Rattus norvegicus* after gingivectomy. **Methods:** This research using true experimental methode with using 24 rats divided to 6 groups and observation is done with 3 time series (day 1, day 2, day 3). Gingivectomy performed to control groups then researcher do not applicate ethanol extract gel of *Artocarpus altilis*'s leaf. Gingivectomy performed to treatment groups then researcher applicate leaf extract gel of *Artocarpus altilis* with 20% concentration. Soft tissue preparation is made by Hematoxylyn-eosin staining. Capillaries vascularization are calculated in 10 field of view with 400x microscope magnification. **Results:** One-Way Anova test shows there is mean capillary difference between groups. Post-Hoc test shows significancy between control groups and treatment groups (p = 0,004). Vascuarization is higher in 7th day treatment groups. **Conclusion:** There an effect of ethanolextract gel *Artocarpus altilis*'s leaf to increase the sum of vascularity on oral mucose of *Rattus norvegicus* after gingivectomy with 20% concentration.

Keywords: Ethanol extract gel *Artocarpus altilis*'s leaf, Vascularization, Gingivectomy.

Effect of Papaya (*Carica papaya*) Juice on Angiogenesis in Wound Healing Post Gingivectomy in Male *Rattus novergicus*

Eliza Rahma Putri[1], Umi Kalsum[2], Diah[3]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Pharmacology, Faculty of Medicine, Universitas Brawijaya, Malang 65144, East Java, Indonesia
[3] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: diah_loekito@yahoo.com

ABSTRACT

Introduction: Gingival Enlargement is an overgrowth of the gingiva caused by local and systemic factor. The required treatment is gingivectomy that cause wound. Papaya contains several phytochemicals like vitamin C, flavonoids, and beta-caroten as antioxidants. It prevent the damage of the cell caused by radicals and help the healing process. Flavonoid also has effects as anti-inflammatory, antihistamine and immunostimulant that lix the immune system and stimulate the VEGF the main angiogenic stimulator Vitamin C the essential cofactor of collagen synthesis responsible Tar the vascular wall strength. The purpose of this study was to determine the effect of papaya (*Carica papaya*) juice on angiogenesis in wound healing post gingivectomy. **Methods:** This study used true experimental method on laboratory in-vivo with Randomized Group Post Test Only Design. Gingivectomy used 2 mm diameter of bur with 0.5 - 1mm depth on mandible. The concentrations that were used were 60%, 80%, 100% and positive control. The dissection was on the 3rd and 5th day. At concentration of 60% we obtained the minimum numbers of new vascular (angiogenesis), while at concentration of 100% we obtained the maximum numbers of new vascular (angiogenesis). **Results:** Data analysis using One-way ANOVA showed a significant difference in the change in concentration of papaya juice against the number of angiogenesis ($p < 0.05$). Pearson correlation test showed a strong relationship that shows the increasing of concentration leads to increased angiogenesis. **Conclusion:** Based on this study, it can be concluded that the papaya (*Carica papaya*) juice is effective on increasing the number of angiogenesis in wound healing.

Keywords: Gingival Enlargement, Gingivectomy, Wound, Angiogenesis, Papaya

Calcium Oxide from the *Anadara granosa* Shell Restore the Porosity of the Tooth Enamel

Devinta F Rubai[1]*, Prasetyo Adi[2], Ambar Puspitasari[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: devintarubai@ymail.com

ABSTRACT

Introduction: The release of calcium can cause a microporosity on the tooth enamel surface to lead to the occurrence of tooth caries. *Anadara granosa* (blood cockle) shell contains high calcium concentration which is potent to be an enamel remineralization material. The purpose of this research was to prove that calcium oxide (CaO) isolated from blood cockle shell repair tooth enamel microporosity. **Methods:** This research was conducted through the true experimental randomized post-test only controlled group design with in vitro method. The sample used was the lower primary incisive teeth, divided into five groups: K- (without caries-like lesion, without calcium), K+ (caries-like lesion, without calcium), P1 (caries-like lesion + calcium 1 mmol), P2 (caries-like lesion +calcium 3 mmol), P3 (caries-like lesion + calcium 5mmol). Calcium oxide (CaO) was obtained from the shell calcination by heating at a temperature of 1000^{o} C for five hours. The teeth were pH-cycled for 5-days to produce the caries-like lesion (enamel microporosity), then the teeth incubated in CaO solution for 14-days. Measurement of enamel microporosity's diameter using SEM (Scanning Electron Microscope). **Results:** There was a significant difference in microporosity's diameter between K+ and P1, P2 and P3, respectively, in which the positive control group has a greater diameter. While no significant difference between that treatment groups with K-. **Conclusion:** The calcium of *Anadara granosa* shell repair enamel microporosity.

Keywords: *Anadara granosa*, Enamel, Calcium, Microporosity

Setting Time Test on Alginate with Addition of Potato Starch (*Solanum tuberosum*)

Nanda Setya Asmarawati[1], Kartika Andari Wulan[2]*, Diena Fuadiyah[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Prosthodotics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: kandariwulan@ub.ac.id

ABSTRACT

Introduction: Alginate is the most widely used t ype of irreversible hydrocolloids as an anatomical mold for patient care planning and discussions. But, in some part of the world, alginate is difficult to be obtained because of limited supply, and also difficult for them to get access to buy this product. An alternate to minimize the amount of alginate used is by adding some natural substance containing polysaccharides, potato starch. This research aims to know the difference of setting time pure alginate and alginate wit@the addition of potato starch (Solanum tuberosum). **Methods:** The study conducted a laboratory experimental with Post Test Only Control Group Design using thirty samples and were divided into six groups (alginate:potato starch), group I (100º/c:0º/), 2 (60º/ :40º/), 3 (55º/r:45º/c), 4 (50º/ :50º/), 5 (45º/c:55º/c), 6 (40º/c: 60º/c). Setting time was measured by using a cylindrical bar made of poly (*mrr/ir/ mrr/io< rv/arr*). **Results:** The result was based on ANOVA statistic test shows that the presence of corn potato starch (Solanum tuberosum) material among every groups, the group that has a setting time almost sirnil ar to pure alginate is grou p with 55º/c alginate concentration and potato starch 45º/c. **Conclusion:** The conclusion of this research is potato starch (Solanum tuberosum) can be used as alternative impression material reviewed from setting time, because it has a setting time closed to ANSI/ADA standard specification which is 2-4.5 minutes.

Keywords: Alginate, Potato starch, Setting time

In Vitro Study of Ethanolic Pandan Leaves Extract (*Pandanus amaryllifolius Roxb.*) against *Lactobacillus acidophillus*

Yonisa Safira[1], Anggani Prasasti[2], Merlya[3]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Dental Public Health, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: merlyabalbeid@gmail.com

ABSTRACT

Introduction: *Lactobacillus acidophilus* is a bacteria represent in oral saliva that plays a role in oral diseases such as dental caries. Pandan leaves (*Pandanus amaryllifolius Roxb.*) contain active compounds of flavonoids, alkaloids, tannins and saponins, which have been widely reported to have antibacterial effects. This study aimed to prove the antibacterial effect of ethanolic pandan leaves extracts against *Lactobacillus acidophilus* bacteria. **Methods:** This research is *in vitro* study using the tube dilution method to determine the Minimum Inhibitory Level (MIC) and the Minimum Bacteriocidal Level (MBC). The sample used was *Lactobacillus acidophilus* with a concentration of 10^6 CFU/ ml. The final concentrations of the extract tested were 0%, 25%, 27.5%, 30%, 37.5%, 35% and 37.5% v / v respectively with three repetitions. **Results:** The concentration of 30% was the MIC of ethanolic pandan leaves extract against *Lactobacillus acidophilus*, and at a concentration of 37.5% was the MBC. Based on the correlation test, it showed that there was a strong relationship with a negative direction, which means that if the concentration of the extract increased, the number of bacterial colonies decreased (correlation coefficient 0.93). **Conclusion:** Ethanolic pandan leaves extract has the potential antibacterial against *Lactobacillus acidophilus*.

Keywords: Lactobacillus, Pandan, Antibacterial

Peperomia pellucida [L] Kunth Decoction Prevent Increasing Triglyceride Level in Rat with a High-Fat Diet

Ramya Hidayani[1], Setyohadi[2]*, Ega Lucida Chandra Kumala[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Periodontology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: tiyo1968@ymail.com

ABSTRACT

Introduction: High triglyceride levels are a risk factor for heart disease. The leaves of *Peperomia pellucida* [L] Kunth (suruhan) contain alkaloids, calcium oxalate, tannins, saponins, polyphenols, fats, and essential oils, which are believed to lower blood cholesterol. This study aimed to explore the effects of decoction of leaves *Peperomia pellucida* [L] Kunth on serum triglyceride levels in rats with a high-fat diet. **Methods:** The research was carried out on 25 male Wistar rats which were fed a high-fat diet for 14 days. In the treatment group, in the feed added decoction of leaves *Peperomia pellucida* [L] Kunth at a concentration of 10%, 20% and 30%, respectively and as positive control rats were only given a high-fat diet. Measurement of serum triglycerides used the Gpo-Pap method. Normal rats without any treatment were a negative control group. **Results:** It showed that a high-fat diet in rats caused the serum triglyceride levels to increase significantly. The administration of decoction leaves *Peperomia pellucida* [L] Kunth showed no significant difference in triglyceride levels compared to normal. **Conclusion:** Leaves *Peperomia pellucida* [L] Kunth decoction has the potential to prevent increasing serum triglycerides in rats with a high-fat diet.

Keywords: *Peperomia pellucida* [L] Kunth, Triglyceride, High- fat diet

Effect of Polishing Time on Color Stability of Nanohybrid Composite Resin after Immersion in Robusta Coffee Solution (*Coffea robusta*)

Zhazha Carissa Primiera[1], Faidah[2], Anggani Prasati[2]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: angganiprasasti@gmail.com

ABSTRACT

Introduction: Polishing on composite resin is the final step to achieve smooth and gloss surface. Immediate polishing may increase on both the surface roughness and the water resorption ability, compared to delayed polishing for 24 hours or more after polimerization process by light curing and may lead to colour change of composite resin restoration. The aim of this study is to determine the effect of polishing time on colour stability of nanohybrid composite resin after immersion in robusta coffee solution. **Methods:** The research design used in this study is post-test only group design. The samples used in this study are cylilndricalnanohybrid composite resin that had characteristic of5 mm diameter and 2 mm height. 24 samples were made and divided into 4 groups, one control group (without polishing process), and 3 groups that given polishing process (immediate, 24 hours and 48 hour after polimerization by light curing). Polishing was done by using Enhance or aluminium oxide with low speed handpiece 30.000 rpm for 15 second. All samples immersed in robusta coffee solution for 30 hours. Robusta coffee contains tannin that has brown nature colour. Tannin can easily penetrated and change colour stability of composite resin. Colour measurement of samples was obtained by Spectrophotometer. **Results:** Two lowest group of colour change values are samples that include in 24 hours and 48 hours delayed polishing group.The result of One-Way Anova and post-Hoc Tukey tests showed significance value <0.05. **Conclusion:** The conclusion of this study is there was an effect of polishing time on colour stability of nanohybrid composite resin.

Keywords: Polishing time, Colour stability, Robusta coffee solution, Nanohybrid composite resin

The Effect of Different Immersion Time of Carbonated Beverage on Decreasing Hardness of Nanofiller Composite Resins

Yasinta DwiImansari[1], Yuliana R. Kumala[2]*, Delvi Fitriani[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
2 Department of Conservative Dentistry, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
3 Department of Dental Material, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: malapdgub@gmail.com

ABSTRACT

Introduction: Composite restoration material is a resin matrix material which contain inorganic filler that added in such ways that the properties of the matrix are enhanced. Composite resins have several type, among themare composite nanofillers that have good aesthetic and strength. One of the most important mechanical properties of composite resin is hardness can be affected by water absorption as well as food and beverages consumed by the patient. These days carbonated drink have become a habit of public consumption. This type of drink has an acidic pH of 2,53 which can cause a decrease in hardness of nanofiller composite resins as it can damage matrix and filler bonds. Composite will continue to absorb water until it reaches its saturation point. This study aims to determine the effect of carbonated beverage immersion on the decrease of hardness of nanofiller composite resin. **Methods:** The type of research in this study was laboratory experimental with post test only group design. There are 24 samples of nanofiller composite resins with 5 mm diameter and 4 mm thickness. The samples were divided into 6 groups, which is soaked with aquadesand carbonated drink in 30 minutes, 60 minutes, and 120 minutes. After the immersion, we measured value of hardness changes with Micro Vicker Hardness Tester. **Results:** The group immersed in 120 minutes carbonated drink has the lowest hardness value, One Way Anova statistical test obtained significance value $p = 0.00$ ($p < 0.05$). **Conclusion:** Carbonated beverage immersion effect the decreasing of hardness in nanofiller composite resin.

Keywords: Carbonated drink, Decreased hardness, Nanofiller composite resin

The Difference Degrees of Dental Caries Severity On Controlled And Uncontrolled Diabetes Mellitus Patients In Puskesmas Baruharjo

Loviea Ayuning Putri[1], Retty Ratnawati[2], Fidya[3]*

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Physiology, Faculty of Medicine, Universitas Brawijaya, Malang 65144, East Java, Indonesia
[3] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: fidya_priyambata@yahoo.com

ABSTRACT

Introduction: Diabetes mellitus is a chronic disease which characterized by increased glucose level in the blood. Dental caries occurs due to the presence of certain bacteria that have acid forming properties. Patients with uncontrolled diabetes have an effect on dental caries, because of the increase of fermentable carbohydrates in the saliva and is a suitable medium for the formation of acid to facilitate caries. The purpose in this study was to determine the difference degrees of dental caries in controlled and uncontrolled diabetes mellitus. Methods: This type of research was observational analytic with cross-sectional design. The sample in this research was all patients with diabetes mellitus (measured by HbA1c) who had dental caries (measured by DMF-T index) with total 110 respondents. Group I was patients with controlled diabetes mellitus (∑ HbA1c 7.20% ± 0.7). Group II patients with uncontrolled diabetes mellitus (∑ HbA1c 12.50% ± 4). Data analysis using independent t test. Result: The study showed group I.90% respondents had the average degree of dental caries severity was mild and group II, 78.2%respondentshad the average degree of dental caries severity was moderate. Analysis test result using independent t test showed significant difference between the groups with $p = 0.000$ ($p < 0.05$). Conclusion: Patients with controlled diabetes mellitus tend to had mild caries severity than patients with uncontrolled diabetes mellitus.

Keywords: Diabetes mellitus, HbA1c, DMF-T

Correlation Between Student's Skill Tooth Carving and Preparation of Abutment in Undergraduate Program of Faculty of Dental Medicine Universitas Brawijaya

Sabrina Roselini[1], Kartika Andari Wulan[2]*, Citra Insany Irgananda[2]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Prosthodontics, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: kandariwulan@ub.ac.id

ABSTRACT

Introduction: One of the skill's lab activity in Prosthodontics department at School of Dental Medicine University of Brawijaya is to make dental bridge, the students are trained to do preparation of dental abutment and make pontic by doing tooth carving. The aim of this study is to identify the effect of student's skill tooth carving to student's skill tooth preparation of abutment in undergraduate program of Faculty of Dental Medicine Brawijaya University. **Methods:** This research was a pre-experimental with one group pretest-posttest, using 105 samples of dental student which doing preparation of first molar as abutment without carving first. Then carving second molar as pontic and continued preparation of first premolar as abutment. The abutment teeth were assessed and scored using modification Rubric Baylor College of dentistry cown preparation scoring criteria rating scale by Nunez. The pontics were carved and scored using rubric which made by researcher and supervisors based on dental morphology by Nelson, Ash.Collected data were processed and analyzed using Spearman Rank Correlation Test and Mann Whitney Test, in order to obtain the conclusion. **Result:** There was a significant difference the result of abutment preparation after tooth carving and without carving first ($p < 0.05$). The abutment preparation after tooth carving were higher in score. There was positive correlation between score carving and preparation. **Conclusion:** the studen's abilityto preparation the abutment correlate with the student's ability to carving the tooth.

Keywords: Dental Bridge, Tooth Carving, Tooth Preparation, Rubric Baylor

Difference between Dental Arch's Width, Dental Arch's Length and Height Palate of Javanese and Bataknese

Shafira Ninditya[1], Fidya[2]*, Neny Roeswahjuni[3]

[1] Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia
[3] Department of Orthodontic, Faculty of Dentistry, Universitas Brawijaya, Malang 65145, East Java, Indonesia

*Corresponding author: fidya_priyambadha@yahoo.com

ABSTRACT

Introduction: Javanese and Bataknese belong to one similar race. However, those two tribes have different characteristics. Javanese belongs to Deutero-Malay sub-race, which has *brachycephalic* feature, while Bataknese belongs to Proto-Malay sub-race, which has *dolicocephalic* feature. Different head shape affects different dental arch's width, dental arch's length and height palate of Javanese and Bataknese. The aimed of this study was to determine the differences of dental arch's width, dental arch's length and height palate between Javanese and Bataknese based on gender. **Method:** The variables used in this study were width of dental arch, length of dental arch, and height of palate. Data were gathered from measurement of 60 maxilla dental cast that consist of 30 Javanese and 30 Bataknese. This study used *intra-observer reliability* technique. **Result:** Independent T test showed a significant difference in dental arch's width, dental arch's length and height palate between Javanese male and female ($p<0.05$), Bataknese male and female ($p<0.05$), Javanese male and Bataknese male ($p<0.05$), and Javanese female and Bataknese female ($p<0.05$). **Conclusion:** There was different head shape betweenmale and female of Javanese and Bataknese.

Keywords: Dental arch's width, Dental arch's length, Palatal length, Bataknese, Javanese

REVIEW ARTICLES

Porcine in Dental Materials for Periodontal Therapy

Martina Amalia*, Irma Ervina

Department of Periodontics, Faculty of Dentistry, Universitas Sumatera Utara, Medan, Indonesia

*Corresponding author: martina.amalia@usu.ac.id

ABSTRACT

The dental materials traded within Indonesia come from imported goods and local manufacturers and might contain gelatin, a protein derived from porcine, bovine, or other animal sources. Periodontics is more associated with pocket debridement; periodontal therapy aims to repair the damaged tissue to its original form and function. This requires the regeneration of the damaged periodontal connective tissue by forming new cementum, new bone, and new adhesions of new connective tissue fibers. To achieve this, several surgical techniques, including targeted tissue regeneration (GTR), bone grafting (BG), and the use of enamel matrix derivatives (EMD), have been developed. The choice of grafting biomaterials from different animal origins may influence the outcome. This review provides an overview of the materials currently in use for periodontal therapy. These materials are used in the treatment of new tissue growth to regenerate tooth function.

Keywords: Porcine, Periodontal therapy, Regeneration.

New Habits Therefore The Impact of Covid 19 on Socio-Culture on Health Perspective : A Literature Review

Diena Fuadiyah[1]*, Kirana Herwinda P[2], Fatimah Isdati N[2], Huwaida Maulina[2]

[1] Department of Oral Biology, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: drg.diena.fuadiyah@gmail.com

ABSTRACT

Covid 19 (Corona Virus Disease 2019) has become a public health issue since it was identified in Wuhan, China in December 2019. The impact of Covid 19 is significant in the economic sector, and also has an impact on the social and cultural sector. We summarized the impact of Covid 19 on the social and community cultural sector from a health perspective. We searched literature in Pubmed, Science Direct, Hindawi, Sage Journal and ResearchGate with criteria that journals are published in the last five years and discussed the impact of Covid 19 on social (including socio-economic) and culture in a health perspective. A total of 40 citations were identified, including journal articles, reviews and other publications. Major areas identified through evaluating keywords and text data included social, culture, impact, which are associated with COVID-19. The impacts of Covid 19 bring positive and negative changes to the cultural sector, so it can be concluded that post Covid 19, the positive impact is people are more aware of personal hygiene while the negative impact is by social isolation people tend to be more sensitive.

Keywords: Covid 19, Social, Cultural, Impact, Mental health

Salivary Flow Rate and Ph as Indicators of Oral Diseases

Fairuz Dian Sartika[1]*, Novi Khila Firani[2,3,4]

[1] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[2] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[3] Biochemistry-Biomolecular Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[4] Clinical Pathology Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: fairuzdian26@gmail.com

ABSTRACT

Saliva is a biological fluid produced by salivary glands, it contains electrolytes, proteins, glycoproteins, and small organic molecules. It is essential for preserving oral health with various host defense functions such as lubrication, antimicrobial activity, teeth mineralization, and provides digestion enzymes. Saliva performs as a simply accessible diagnostic, especially in oral diseases diagnostic. The purpose of this review is to evaluate the properties of salivary flow rate and pH as indicators of oral diseases. We performed a systematic review by analyzing the research results that have been published in PubMed and Google Scholar databases from 2011 to 2020. We found 10 research journals that mention salivary flow rate and pH as indicators in oral disease. Most (9 journals) stated that alteration in salivary pH and flow rate are associated with oral diseases. The pH in oral space is sustained near neutrality (6.7-7.3) by saliva. The flow rate of normal unstimulated saliva is around 0.3-0.4 ml/min. In periodontitis there is an increase of salivary pH and flow rate. An alkaline pH is correlated with increased proteolytic action to *Porphyromonas gingivalis*. The increase of salivary flow rate in periodontitis due to defense mechanism against periodontal inflammation. In dental caries there is a decrease of salivary pH values and flow rate. An acidic salivary pH is favorable for enamel demineralization. Decreased of salivary flow rate has a cariogenic effect that can lead to enamel demineralization. There was only 1 journal stated that salivary flow rate and pH had no significant correlation with dental caries. The physicochemical properties of saliva such as flow rate and pH are associated with oral diseases.

Keywords: Salivary Flow Rate, Salivary pH, Oral Diseases

Artificial Intelligence: A Possible Tool in Modern Dentistry - Literature Review

Diena Fuadiyah[1]*, Fatimah Isdati N[2], Huwaida Maulina[2], Kirana Herwinda P[2]

[1] Department of Oral Biology, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: drg.diena.fuadiyah@gmail.com

ABSTRACT

In the modern era, dentistry has many challenges in analyzing, collecting, and applying data to diagnose and treat diseases. Artificial Intelligence (AI) is the ability possessed by digital computers or computer-controlled robots to perform tasks usually associated with intelligent beings. AI has a significant role in dentistry including patient diagnosis, patient data storage, and genetic information assessment that is expected to provide improved healthcare for patients. In this literature review, we summarize the applications, opportunities, and limitations of AI in modern dentistry. We searched literature in Pubmed, Science Direct, and ResearchGate with criteria that journals are published in the last five years. We did a boolean search with "Modern dentistry" or "Artificial Intelligence dentistry". A total of 184 citations were identified, including journal articles, reviews and other publications. Then, we scanned either the titles or abstracts and excluded 178 articles. Major areas identified through evaluating keywords and text data included artificial, intelligence, dentistry, and other modern dentistry topics associated with artificial intelligence technology. Finally, six literatures are used in this review. AI can be used as a tool that significantly provides patients with better health care progress, but cannot replace human capabilities in skills, knowledge and assessment power.

Keywords: Artificial, Intelligencae, Dentistry

ACE-2 Expression in Saliva as Reliable Tool to detect SARS-CoV-2 -Literature Review

Diena Fuadiyah[1]*, Huwaida Maulina[2], Kirana Herwinda P[2], Fatimah Isdati N[2]

[1] Department of Oral Biology, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: drg.diena.fuadiyah@gmail.com

ABSTRACT

Currently there is a pandemic with SARS-CoV-2 virus known as Cornoa Virus Disease (COVID-19). Transmission of the virus can occur through coughing, sneezing, saliva contact and can even occur through contact with tears. Many viruses can be found in the saliva, one of which is SARS-CoV-2. Saliva can be a good specimen in handling the SARS-CoV-2 virus. In this literature discussing saliva can be used as a diagnostic to easily and precisely check for the SARS-CoV-2. We searched literature in Pubmed, Science Direct, and ResearchGate with criteria that journals are published in the last five years and discussed about recent development diagnostic tools and salivary diagnostic in detection of COVID-19. A total of 103 citations were identified, including journal articles, reviews and other publications. Then, we scanned either the titles or abstracts and excluded 98 articles. Major areas identified by evaluating keywords and text data which included saliva, diagnostic, and COVID-19 topics associated. Finally, 5 literatures are used in this review. Saliva is a biological fluid that has potential to be a candidate for diagnostic rapid test.

Keywords: Saliva, Covid-19, Rapid test

Implanted Three-dimensional (3D) Printed Drug Delivery Inhibiting Cancer Growth and Metastasis: A Literature Review

Diena Fuadiyah[1]*, Kirana Herwinda P[2], Fatimah Isdati N[2], Huwaida Maulina[2]

[1] Department of Oral Biology, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: drg.diena.fuadiyah@gmail.com

ABSTRACT

Cancers, the second leading cause of mortality worldwide, has chemotherapy as one of therapeutic strategies for them. Chemotherapy needs high doses drug to provide sufficient drug concentration at the lesion's site. It causes unwanted and severe side effects. Implanted drug delivery reduces drug exposure and minimizes unwanted effects. Three-dimensional (3D) printing technique allows preparing complex forms with different doses release profiles and increases the precision of personalized therapy. In this review, we summarized the application and result of implanted 3D-printed drug delivery on inhibiting cancer growth and metastasis. We searched literature in ScienceDirect and Sage Journal with criteria that journals are published in the last five years and discussed drug development trends and drug delivery in cancer. A total of 609 journal articles or reviews are identified. Then, we scanned either the titles or abstracts and identified through evaluating keywords and article content text included cancer, drug delivery and 3D printed. Finally, 6 literatures are used in this review. The PLGA/5-FU/NVP-BEZ235 (PFN) scaffold filled with anti-cancer drug did not reduce the drug effectiveness on inhibiting growth and metastasis of cancer in smaller doses compared to injection drug administration. However, an implanted scaffold requires surgical procedure.

Keywords: 3D drugs delivery, Anti-cancer drug, Drug development

Effectivity of Nanospray Green Algae Extract as Gingival Abcess Cytokines Inhibitor: A Systematic Review

Raviki Afandy[1]*, Fahreza Nurwahyu Habibillah[1], Yusak Natalino Purnomo[1], Astika Swastirani[2]

[1] Dental Education, Faculty of Dentistry, Brawijaya University, 65145 Malang, Indonesia
[2] Department of Oral Medicine, Faculty of Dentistry, Brawijaya University, 65145 Malang, Indonesia

*Corresponding author: ravikaf8@student.ub.ac.id

ABSTRACT

One of the most common periodontal diseases is gingival abscess. Gingival abscess occurs due to an increase in the number of inflammatory cells and is caused by uncontrolled bacterial invasion. The use of anti-inflammatory drugs can be obtained from microalgae which are biologically active compounds. This research design uses Preferred Reporting Items for Systematic Reviews and Meta-analyses writing rules. The databases used are PubMed, Web of Sciences, Scopus and Google scholar. The search for articles in the database yielded 2690 articles, and after screening according to the inclusion criteria, 51 articles were obtained for the synthesis process. One of them is green microalgae, namely *Dunaliella sp*. A type of carotenoid *Dunaliella sp*. which can be used as an anti-inflammatory is astaxanthin. Astaxanthin may decrease the concentration of the pro-inflammatory mediator IL-1β and IL-6 significantly decreased. Using astaxanthin with nano spray technology can maximise its performance against pro-inflammatory mediators by mixing astaxanthin extract with a supporting formula to produce aerosol formulations. This preparation will be applied to the infected area.

Keywords: Nanospray, Astaxanthin, *Dunaliella sp.*, Cytokines, Gingival abscess

Potential Combination of Genistein and Nanobots Through Akt/NF-κb Signaling Pathway as Latest Therapy for Oral Squamous Cell Carcinoma

Syahnas Rahmat Farendino[1]*, Fadilah Tyas Widarti Pangastuti[1], Mei Syafriadi[2]

[1] Faculty of Dentistry, University Of Jember, 68121 Jember, Indonesia
[2] Oral Pathology Laboratory, Depatement of Biomedical Sciences Faculty of Dentistry, University Of Jember, 68121 Jember, Indonesia

*Corresponding author: syahnas.farendino@gmail.com

ABSTRACT

Oral squamous cell carcinoma (OSCC) is the most common type of oral neoplasms. Estimated more than 90% of all oral neoplasms are OSCC. The current therapies for OSCC are surgery, chemotherapy, and radiotherapy. However, current therapy causes side effects such as healthy tissue damage, xerostomia, failure of treatment with recurrence. Therefore, alternative medicine methods need to be developed. Ginestein is a potential anti-cancer agent against OSCC. The effectiveness of Ginestein as an anti-cancer agent can be increased through the use of nanobots that act as drug delivery systems (DDS) to target cells. In this paper, we use systematic review with meta-synthesis by using a comprehensive summary of previous research, define the gap of knowledge, select the studies by entering the keywords that have been determined and assess the quality, analyze and express the synthesis. Genistein is an anti-cancer agent found in soybeans. Genistein has an anti-cancer effect by altering apoptosis, the cell cycle, and angiogenesis and inhibiting metastasis. Genistein as an anti-cancer therapy agent shows potential to treat OSCC which mechanism of action targets Akt/NF-κB Signaling Pathway. The bioavailability of Genistein as an anti-cancer agent can be increased through the use of nanobots that act as DDS to target cells. Nanobots is the latest nanoparticle innovation in the field of medicine which could transport material to the target cell. The use of nanobots allows a reduction in the effect of drugs on healthy cells, prevention of drug damage due to contamination and denaturation, increased bioavailability so that successful treatment can be achieved. Combination of Genistein as an anti-cancer agent and Nanobots as DDS which targets Akt/NF-κB Signaling Pathway has potential to increase success rate of OSCC therapy.

Keywords: OSCC, Genistein, Drug Delivery System, Nanobots, Akt/NF-κB Signaling Pathway

COVID-19 Severity Risk Reduction: *Oryza sativa* as *Porphyromonas gingivalis* and Gingipain Inhibitor in Diabetes Mellitus

Ariadna Adisattya Djais[1], Benso Sulijaya[2], Viandra Salsabilla Arif Tjokroadiredjo[3]*, Angel Natania Hidayat3, Devin Hendrawan[3]

[1] Department of Oral Biology, Faculty of Dentistry, Universitas Indonesia, 10430 Jakarta, Indonesia
[2] Department of Periodontology, Faculty of Dentistry, Universitas Indonesia, 10430 Jakarta, Indonesia
[3] Faculty of Dentistry, Universitas Indonesia, 10430 Jakarta, Indonesia

*Corresponding author: viandra.salsabilla@ui.ac.id

ABSTRACT

COVID-19 is a respiratory tract viral infection caused by SARS-CoV-2 virus that has became a pandemic in 2020 and is causing major socioeconomic alterations and losses. Diabetes mellitus (DM) is known to be a predisposing factor in the severity risk and mortality rate of COVID-19. Periodontal disease is a disease in the oral cavity known to have systemic implications, especially on DM, through the activity of *Porphyromonas gingivalis* (PG) virulence factor, gingipain. Several proteins from *Oryza sativa* extract have the ability to inhibit gingipain. Methods: A review of relevant literature was performed to elaborate on periodontitis involvement in DM, inhibition factor, and COVID-19 risk. A total of 30 qualified published literature of all years were collected from electronic database and manual search and included in this review. Retrospective studies have shown an increase of COVID-19 severity risk in DM patients. Periodontitis has a two-ways relationship with and is a risk factor of DM. PG is the main pathogen of periodontitis with Gingipain as its' virulence factor. Gingipain is known to be proteolytic and is responsible for DM progression through immune system disturbance and is proven to decrease insulin sensitivity. *Oryza sativa* extract contains 4 proteins (26 kDa globulin, trypsin/α-amylase inhibitor, plant lipid transfer/trypsin-α-amylase inhibitor, dan RA17 seed allergen) that account for 90% of gingipain inhibition activity. Periodontitis control is proven to control DM and COVID- 19 severity risk. However, proteins extracted from *Oryza sativa* are generally unstable when used as oral route therapeutic agents because of gastrointestinal tract barriers. Biocompatible nanoscaffold are able to overcome those physiologic barriers. *Oryza sativa* nanoscaffold is potential in inhibiting Gingipain from *Porphyromonas gingivalis* as a strategy to control DM to reduce COVID-19 severity risk.

Keywords: Comorbidity, COVID-19, Gingipain, *Oryza sativa*, Periodontitis

Implementation of Augmented Reality: A Current Perspective on Oral and Maxillofacial Surgery

Arinny Shafira Khairunisa*, Dimas Raihan Aditya

Faculty of Dentistry, University of Indonesia, Jl. Salemba Raya, Central Jakarta 10430, Indonesia

*Corresponding author: arinny.shafira@ui.ac.id

ABSTRACT

Oral and maxillofacial surgery is one of the specialities in dental medicine that covers the management of conditions of soft and hard tissues of the maxillofacial region. The oral and maxillofacial regions are intensely populated with salient structures including vital nerves and vessels. The complex anatomy of oral and maxillofacial regions requires a detailed presurgical approach. In the present study, those requirements can be altered by using Augmented Reality (AR). AR is a technology that offers visualization for the assessment of the real environment into diagnostic and treatment procedures. The aim of the study is to analyze the application of AR in oral and maxillofacial surgery. We reviewed the literature and the existing database using PubMed, ResearchGate, and SCOPUS. All the studies in the English literature in the last 10 years were included. The initial search yielded 117 studies. We identified 92 relevant articles related to the broad application of AR in oral surgery. By reading abstracts, a total of 47 studies were included in this review. In the need for precision and accuracy in oral surgery, AR navigation systems have been utilized to improve work efficiency and safety to escalate surgical training. It can be used in implant placement, orthognathic surgery, and other surgical applications. AR will provide realistic outcome predictions by creating a virtual environment of the procedure, thus enabling surgeons a higher chance of accomplishing better outcomes and alleviating potential risks. Based on this literature review, it can be concluded that AR has shown a promising result to improve operators' efficiency and efficacy in operative dentistry by providing an actual and manipulative operating field, thus increasing the success rate of the treatment. Regardless of limitations toward the utilization of AR, most of these issues are foreseen to be anticipated by technology advancement.

Keywords: Oral and maxillofacial surgery, Augmented Reality, Navigation, Image-guided surgery

The Effect of Betel Nut on Oral Health, Healthy or Harmful?

Aysha Nadya[1]*, Novi Khila Firani[2,3,4]

[1] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[2] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[3] Biochemistry-Biomolecular Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[4] Clinical Pathology Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: ayshanadya11@gmail.com

ABSTRACT

Betel nut is one of the traditions of Indonesian society, especially in rural areas. This tradition is believed by community to strengthen teeth and prevent dental caries. However, some people believe that this chewing has harmful effects on oral health. We performed a systematic review to clear up this issue by analyzing the research results that have been published in PubMed and Google Scholar databases from 2006 to 2020. We found 14 research journals that mention the effect of betel nut on oral health. Most (13 journals) stated that chewing betel have detrimental effects on oral health, which causing oral cancer, bad odor, peridontitis, gingival bleeding, gingivitis, tongue taste disturbances, oral leukoplakia, oral likenoid, oral submucous fibrosis, dental stains, teeth decay, and dental caries. There was only 1 study which stated that betel nut could reduce dental caries. Betel nut has a harmful effect on oral health.

Keywords: Betel nut, Harmful, Healthy, Oral health, Systematic review

Potential of Nano-emulsion Based-gel Bromelain in Suppressing Myofibroblasts towards Hypertrophic Scars after Cleft Lip Reconstruction

Oswalda Rena Krismaningrat Laksono[1]*, Priska Anindhita Aprilia Rahmawati[1], Syafira Salsabila[1], Diena Fuadiyah[2]

[1] Dentist Professional Education, Faculty of Dentistry, Brawijaya University, 65145 Malang, Indonesia
[2] Department of Oral Biology, Faculty of Dentistry, Brawijaya University, 65145 Malang, Indonesia

*Corresponding author: oswaldalaksono@gmail.com

ABSTRACT

Hypertrophic scar usually occurs within 3 - 6 months after cleft lip surgical repair which affects aesthetic, function, and restricts facial growth. Bromelain contains an active protease enzyme which has the same therapeutic effect as non-steroidal anti-inflammatory drugs with a fewer side effect and the collagenolytic effect that can suppress persistent fibrosis on delayed wound healing. Nano-emulsion based-gel increases drug absorption through the skin and penetration of drug delivery. This review was conducted by collecting studies from various databases including "Google Scholar", "PubMed", "SpringerLink", and "ScienceDirect". Studies published through 2010-2020 were extracted to get the data. Hypertrophic scar represents abnormal healing due to persistent myofibroblast and an excessive amount of ECM. Bromelain can prevent the prolonged inflammatory response by inhibiting pro-inflammatory cytokines such as IL-1β, TNF-α, COX-2, PGE-2 expression, and reduce plasma kininogen, as well as IL-6 which induced Bcl2 anti-apoptotic signalling that causes resistant myofibroblast. Protease help balance the cytokine network by releasing TIMPs allowing cytokine to promote phagocytosis, thereby promoting wound healing. TIMPs activity involves in ECM remodelling as signalling molecules influencing cell apoptosis. Thus, the inhibition of inflammatory responses may eliminate the pro-fibrogenic environment resulting in decreased myofibroblast activation and ECM production. The administration of nano-emulsion bromelain could decrease collagen synthesis and myofibroblast regulation. The stable formulation of nano-emulsion based-gel can reduce skin surface tension and control drug release, making hypertrophic scar healed faster and more effective with optimal results. Nano-emulsion based-gel bromelain has the potential to suppress myofibroblasts in hypertrophic scars after cleft lip reconstruction.

Keywords: Bromelain, Cleft lip, Hypertrophic scar, Myofibroblast, Nanoemulsion

The Effect Of Wedang Uwuh Consumption Containing Secang Wood On Oral Health

Vania Amadea Husain[1]*, Novi Khila Firani[2,3,4]

[1] Program Study of Dentistry, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[2] Oral Biology Department, Faculty of Dentistry, Universitas Brawijaya, 65145 Malang, Indonesia
[3] Biochemistry-Biomolecular Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia
[4] Clinical Pathology Department, Faculty of Medicine, Universitas Brawijaya, 65145 Malang, Indonesia

*Corresponding author: vamadea@yahoo.com

ABSTRACT

Wedang uwuh is one of traditional beverages of Indonesian society, especially in Central Java. Wedang uwuh contains secang or sappan wood (*Caesalpinia sappan* L.), which is believed by the community to maintain healthy body. In addition, secang wood is supposed to preserve oral health. We performed a systematic review to clear up this issue by analyzing the research results that have been published in PubMed, ScienceDirect and Google Scholar databases from 2010 to 2020. We found 13 research journals that mention the effect of secang wood on oral health. Most (12 journals) stated that secang wood have antimicrobial effects on oral pathogens, i.e *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis, Streptococcus mutans, Streptococcus intermedius, Staphylococcus aureus, Enterococcus faecalis*, and *Candida albicans*. In addition, there was 1 study stated that secang wood effect as anti oral cancer. Wedang uwuh consumption which is containing secang or sappan wood could be beneficial for maintenance of oral health.

Keywords: Wedang uwuh, Secang wood, *Caesalpinia sappan*, Oral health, Systematic review

CASE REPORT

Traumatically Displace and Asymtomatic Pulp Necrosis of Maxillary Incisor in 10 Years-old Girl

Gesti Kartiko Sari[1]*, Rinaldi Budi Utomo[2]

[1] Program Study of Pediatric Dentistry Specialist, Faculty of Dentistry Universitas Gadjah Mada, Yogyakarta 55281, Indonesia
[2] Department of Pediatric Dentistry, Faculty of Dentistry Universitas Gadjah Mada, Yogyakarta 55281, Indonesia

*Corresponding author: gesti.kartiko.s@mail.ugm.ac.id

ABSTRACT

Asymptomatic pulp necrosis is the most common post-traumatic complication. It is usually identified on routine examination. This case report present management of traumatically displace and asymptomatic pulp necrosis of maxillary incisor in 10 years-old girl. The patient came to dental clinic for getting orthodontic treatment of her protrude tooth. Anamnesis was done and found that the protrude tooth was due to falling off the bike, but never cause pain. Pulp necrosis was identified through anamnesis, sensitivity testing, and radiograph. Root canal treatment (RCT) was done prior to orthodontic treatment. Up to 7 months of follow-up, the tooth was in good condition and radiographically, there was no radiolucency along the apical of the tooth. Periodontal status was within a normal physiological limit. Anamnesis on examination is the important thing because there are many patients with asymptomatic case and RCT is a good treatment for asymptomatic pulp necrosis.

Keywords: Traumatic pulp necrosis, Asymptomatic, Root canal treatment

Unexpected Effect of Using Catlan's Appliance in Anterior Crossbite: A Case Report

Endah Damaryanti[1]*, Neny Roeswahjuni[1], Sari Kurniawati[1], Panji Adhytama[2]

[1] Department of Orthodontics, Faculty of Dentistry, Brawijaya University, Jalan Veteran, 65145, Malang, Indonesia
[2] Program Study of Dentistry, Faculty of Dentistry, Brawijaya University, Jalan Veteran, 65145, Malang, Indonesia

*Corresponding author: danti_de_dentist@yahoo.co.id

ABSTRACT

Anterior crossbite is a malocclusion that is often found in mixed dentition phase. Catlan's appliance is one of appliance that is often used to correct anterior croosbite because of its advantages including: easy of making the appliance, economical, practical use, do not need the activation, and need quick time to correction. However, the selection of this appliance must be in accordance with the indications and need routine control in order to get optimal results and avoid an unexpected effect. This case report presents an openbite which happens in orthodontic patient with Catlan's appliances as an unexpected effect of this appliances. Cases: 2 patients with anterior crossbite and were treated with Catlan's appliance. After a few weeks of using the appliances, an unexpected effect occurs, which is an anterior openbite. Management: If Catlan's appliance is used and then the anterior opebite happen, dentist must stopped the use of Catlan's appliance immediately, so that relapse occurs and no more the severe open bite. Conclusions: From these cases, dentists should be more careful in determining indication and contraindication of Catlan's appliace, need routine orthodontic control and determine when Catlan's appliance shoud be stopped to avoid the unexpected effect of using the appliance

Keywords: Anterior crosbite, Catlan's appliance, Anterior openbite

Oral Squamous Cell Carcinoma in Lateral Tongue of the Women with Thrombocythemia (mutation in the gene JAK2 V617F): A Case Report

Kurnia Hayati Rahman[1], Meircurius Dwi Condro Surboyo[1], Diah Savitri Ernawati[2]*

[1] Faculty of Dental Medicine. Universitas Airlangga. Surabaya 60132 – Surabaya, Indonesia
[2] Department of Oral Medicine. Faculty of Dental Medicine. Universitas Airlangga. Surabaya 60132 – Surabaya, Indonesia

*Corresponding author: oswaldalaksono@gmail.com

ABSTRACT

Oral squamous cell carcinoma (OSCC) defines as a malignant epithelial neoplasm and the most type of oral malignant neoplasm. The most location are the tongue and floor of the mouth. Thrombocythemia is the presence of an abnormally high number of platelets in circulating blood. A 42, years old female came with ulcer, pain and arised suddenly in the dextra lateral tongue. The ulcer size was 2x3 mm in diameter, and arised since 1 month ago. 2 weeks later pain was reduced, but there was swelling around ulcer. Based on examination the hard palpable on swelling in the lateral tongue. The patient had a history thrombocytemia since 3 month ago due to mutation in the JAK2 V617F, then the patient was given therapy hydroxyurea to drink 2 times a day. The diagnosis OSCC was defined by anamnesis, clinical examination, supporting examination are scrapping and MRI. The treatment is antibacterial mouthwash to prevent secondary infection and was referred to an oncologist for hemiglossectomy. The increase in platelet number causes in increase of PDGF (Platelet-Derived GrowthFactor). PDGF plays important role in the many malignant tumor.

Keywords: Oral squamous cell carcinoma, thrombocytemia, Mutation JAK 2 V617F

Management of Recurrent Intraoral Herpes Triggered by Stress

Ni Putu Riskayanti[1]*, Yuskhaidir[1], Saka Winias[2], Nurina Febriyanti Ayuningtyas[2]

[1] Resident of Oral Medicine Specialist Study Programme, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia 60132
[2] Department of Oral Medicine, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia 60132

*Corresponding author: ni.putu.riskayanti-2018@fkg.unair.ac.id

ABSTRACT

Recurrent intraoral herpes (RIOH) is the reactivation of latent herpes simplex virus type 1 that are triggers by some factors included stress, trauma, hormonal, exposure to sunlight, cold temperature, or immunosuppression condition. RIOH usually begins with prodromal symptoms and it is considered as a self-limiting disease. This paper aimed to report the management of recurrent intraoral herpes triggered by stress. A 22-year-old female came with chief complaint multiple ulcers on the left labial mucosa of the lip, lower anterior gingival, lower labial mucosa, left and right buccal mucosa that feels painful since 4 days ago. Patient took vitamin C to reduce the pain but there were no significant changes on her condition. Two weeks before, patient had a fever and pain during swallowing. Patient said that she got many problems related to her work and college leading to a lack of sleep and psychological stress. No extraoral abnormalities were found. Intraoral examination results showed an ulcer with round-shaped, whitish, clear border, regular, surrounded by halo erythematous on the left labial mucosa superior, lower anterior gingiva, labial mucosa inferior, buccal mucosa dextra and sinistra. Management included psychometric DASS-42 test, complete blood count, total IgE, IgM, and IgG anti HSV- 1, antiseptic and antiinflammation mouthwash was prescribed 4 times daily. The condition was resolved after 2 weeks and the result of psychometric DASS-42 test was improved every next visit. The dentist played an essential role in identifying RIOH. RIOH triggered by stress required comprehensive management from history taking, clinical and laboratory examination.

Keywords: Recurrent Intraoral Herpes, Herpes Simplex Virus, Self-Limiting Disease, Stress, Management

Management of Chronic Traumatic Ulcer Mimicking Oral Squamous Cell Carcinoma in Geriatric Patients: A Case Report

Bima Ewando Kaban[1]*, Dahlia Riyanto[1], Nurina F Ayuningtyas[2]

[1] Resident of Oral Medicine Specialist Programme, Faculty of Dentistry Universitas Airlangga, Surabaya 60132, Indonesia
[2] Department of Oral Medicine, Faculty of Dentistry Universitas Airlangga, Surabaya 60132, Indonesia

*Corresponding author: drgbima.bk@gmail.com

ABSTRACT

The chronic traumatic ulcer (CTU) is the most common oral mucosal lesions which has similarities with oral squamous cell carcinoma (OSCC). In 90-95 % cases of OSCC is present as a non-healing ulcer, while CTU is the result of repeated injuring by the mechanical trauma. Sharp or rough teeth because of fractures could be responsible for etiology of CTU or OSCC.CTU has been considered as a potential risk factor for OSCC. Geriatric is the major risk factor for OSCC, represents the second most common cause of death. To present management of CTU mimicking OSCC in geriatric patient. A 60-year old female came with chief complaint a painful ulcer on the right lateral posterior of the tongue and non-healing since 1 month ago. Patient had eating difficulty. Patient treated it by using antiseptics as well as antibiotics and analgesics but not healed instead the lesions are getting bigger and painful. Extraoral examination show no abnormalities. Based on the clinical and laboratory examination, final diagnosis lead to CTU caused by mechanical trauma the 48 teeth radix. The lesions was imitating OSCC. The first treatment of this lesion is grinding teeth radix 48 and extraction were performed by Oral Surgeon. As pharmacological theraphy, topikal corticosteroid namely triamcinolone acetonide was prescribed 4 times a day. The lesion was healed after 16 days since the initial visit. Intraoral examination showed ulcer, soliter, oval, 1.5x1 cm, yellowish-white, clear border, induration. The 48 teeth radix was sharp and during occlusion lead to trauma on the right lateral border of the tongue. CBC was performed. The dentist played an important role in distinguishing CTU from OSCC. Comprehensive treatment from clinical, laboratory examination and multidisciplinary management needed for CTU management.

Keywords: Chronis traumatic ulcer, Oral squamous cell carcinoma, Geriatric

Management of Midline Diastema on Anterior Teeth with Direct Composite Restoration: A Case Report

Darwin Yunaidy[1], Shalina Ricardo[2],*

[1] Faculty of Dentistry, Universitas Indonesia, 10430 Jakarta, Indonesia
[2] Lecturer, Department of Conservative Dentistry, Faculty of Dentistry, Universitas Indonesia, 10430 Jakarta, Indonesia

*Corresponding author: shalina.ricardo02@ui.ac.id

ABSTRACT

Diastema between anterior teeth is frequently considered a typical aesthetic concern of patients. Assessment of the midline diastema's multifactorial etiology ought to be appropriately evaluated to achieve a successful treatment. Numerous treatment choices are available for diastema closure. Effective treatment depends on time, physical, psychological, and economical limitations in deciding a proper technique and material. It reports the successful application of direct composite resin restoration in the management of a 26-year old female patient with midline central diastema. A 26-year old female patient came to Universitas Indonesia Dental Hospital with a chief complaint of lack of confidence to smile due to the gap on the two central front teeth. In this case report, diastema closure was carried out with direct composite restorations by free-hand technique. Self-etch adhesive and a single shade composite were applied to close the diastema. Anatomic contouring of the proximal surface was permitted by placing the celluloid matrix inter-proximally between the anterior teeth, followed by finishing and polishing procedures by using polishing discs. At one-week and one-month recall, the teeth and restorations did not show any clinical signs of failure like discoloration or fracture. The patient also did not complain of any sensitivity. The utilization of direct composite appeared to be profoundly aesthetic and durable in fulfilling the patient's satisfaction under the conditions presented.

Keywords: Composite, Free-hand technique, Midline diastema

Management of Partial Impacted Mandibular Third Molar in a 42-Year Old Female as a Prosthodontic Mouth Preparation: a case report

Azimah Nurin Nafilah[1], Hilda Octaviani[1], Lalita El Milla[2]*

[1] Dentistry Faculty, Brawijaya University, Veteran Street 65145 Malang, East Java, Indonesia
[2] Oral and Maxillofacial Department, Dentistry Faculty, Brawijaya University, Veteran Street 65145 Malang, East Java, Indonesia

*Corresponding author: lalita.fk@ub.ac.id

ABSTRACT

Prevalention of Impacted third molars in permanent dentition is 35.9%– 58.7% in adults. Impacted tooth affected prosthodontic treatment because we need to reach retromolar pad as denture retention. Impacted tooth lead pericoronitis and detract the denture stabilization. Mouth preparation is needed to obtain best prostodontic result. Odontectomy or third molarsurgery is a common procedure in the extraction of third molar. The objective of this journal to report the management of impacted mandibular third molar as mouth preparation in prostodontic treatment. A 42-year-old female came with a chief complain uncomfortable with impacted and caries mandibular third molar teeth. The teeth had been sore and swollen about 1 year ago and had never been treated. The patient wanted to have a denture and was referred for a wisdom tooth surgery. When she came to the clinic, the patient did not complain of pain or swelling. Odontectomy with postoperative prescription of amoxicillin and mefenamic acid. Control one day post odontectomy for evaluation of drug allergy, bleeding, suture position and condition. Control three days post odontectomy for evaluation of additional infections and the presence or absence of dry socket. Control seven days post odontectomy to evaluate the healing phase and suture removal procedure. Odontectomy of impacted mandibular third molar teeth is a therapy with good prognosis for mouth preparation of partially impacted mesioangular teeth before prosthodontic procedure.

Keywords: Impacted molar, Mesioangular, Mouth Preparation, Odontectomy

Orif Management of Head Injury Patient's With Multiple Facialis Bone Fracture: A Case Report

Putri Nurfuadah[1]*, M.Z. Arifin[2], Seto Adiantoro[3], Abel Tasman[4]

[1] Dentistry Faculty, Padjajaran University, Bandung, Indonesia
[2] Department of Neurosurgery, RSUP Dr. Hasan Sadikin, Faculty of Medicine, Padjajaran University, Bandung, Indonesia
[3] KSM Oral and Maxillofacial RSUP Dr. Hasan Sadikin, Bandung, Indonesia
[4] Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Padjajaran University, Bandung, Indonesia

*Corresponding author: drgputrinurfuadah@gmail.com

ABSTRACT

Patients with head injuries often develop multiple fractures of the facial bone involving several complex bones. The main objectives of the treatment of multiple fractures of the facial bone are to improve speech and masticatory functions and to produce an aesthetically pleasing facial and dental structure. This case report discusses a female patient aged 26 years who presents headache with fracture of the facial bone due to an accident. From the results of clinical and radiological examination, it was diagnosed with Mild Head Injury and multiple fractures of the facial bone. In this patient, conservative treatment of the head injury was carried out while multiple fracture of the facial bone were managed to ORIF with a combination of wire suspension and plate and screw. Then carried out control for approximately 2 months after the operation showed satisfactory results.

Keywords: Head injury, Multiple fractures of the facial bone, Open reduction (ORIF)

Clinical Significance of The Presence of Oral Hairy Leukoplakia: A Case Series

Sherlyana[1], Febrina Rahmayanti[2]*, Ambar Kusuma Astuti[2]

[1] Oral Medicine Residency Program, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia, 10430
[2] Department of Oral Medicine, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia, 10430

*Corresponding author: febrina_r@ui.ac.id

ABSTRACT

Oral Hairy Leukoplakia (OHL) is an asymptomatic white lesion with a vertical corrugated pattern on the lateral border of the tongue that caused by Epstein-Barr Virus (EBV) infection. OHL was thought to be pathognomonic of HIV infection and immunosuppressive conditions; however, rare cases have also been documented in healthy immunocompetent individuals. OHL apparently similar to other white lesions, therefore the presence of EBV is a key to establish the definitive diagnosis. The objective of this case is to emphasize the importance of establishing definitive diagnosis of OHL and to recognize the correlation between the presence of OHL and immune status of the patients. Three cases showed OHL of HIV positive patient and healthy immunocompetent patients. The presence of EBV were investigated by using PCR and histopathology. OHL remains an important clinical marker to be recognized Appropriate history taking, clinical examinations, and laboratory investigations are important for patient's comprehensive management.

Keywords: Oral hairy leukoplakia, Epstein-Barr Virus, Clinical significance