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Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. *Medical microbiology*. 4th ed. St. Louis: Mosby; 2002.

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Abstract

DDC 616.02774

Rahmawati DY, Dwifulqi H, Sandra F (Department of Oral Biology, Faculty of Dentistry, Maranatha Christian University, Bandung, Indonesia)

Origin, Stemness, Marker and Signaling Pathway of Oral Cancer Stem Cell

Mol Cell Biomed Sci. 2020; 4(3): 100-4

Abstract (English)

Cancer constitutes of complex heterogeneous organ-like structures with a hierarchical cell structure, and only minor phenotypic subpopulations with stem-like properties have a dual capacity to indefinitely self-renew and generate all heterogeneous cell phenotypes consisting of bulk tumor cells. Cancer stem cells (CSC) has similar properties to ordinary stem cells. It is understood that CSC is responsible for the recurrence of metastasis and drug resistance. Thus, control of CSC can provide successful therapy intervention that inhibits cancer growth and aggressive behavior. Conventional cancer therapy is realized to be insufficient for oral cancer therapy. Meanwhile, accurate targeting of OCSC has proved to be a significant challenge due to the commonality of many markers between OCSC and healthy cells. This article discusses the current understanding of oral CSC, with focus on origin, stemness, marker and signalling pathway.

Keywords: microbiome, oral cancer cellular proliferation, microorganism, oral cancer, oral squamous cell carcinoma

DDC 616.398

Ridwan, Febriza A, Linggi EB, Natzir R, Taslim NA (Mappa Oudang Nursing Academy, Makassar, Indonesia)

Correlation between Blood Pressure and Obesity Parameter against Cystatin-C and Adiponectin Levels in Serum of Obese Adolescent

Mol Cell Biomed Sci. 2020; 4(3): 105-12

Abstract (English)

Background: Obesity contributes to the increased risk of chronic kidney and systemic inflammation. This condition can occur in obese adolescents. Most researches of cystatin-C (cys-C) and adiponectin have been carried out in adult and children subjects. The purpose of this research is to determine differences in serum cys-C and adiponectin levels between obese and normoweight adolescents and their correlation with blood pressure and obesity parameters.

Materials and Methods: Twenty-eight obese adolescents and 22 normoweight adolescents aged 15-18 years old participated in this research. After the measurement of blood pressure and obesity parameters, we examined serum cys-C levels as a biomarker for decreased early stage renal function and adiponectin, an antiinflammatory adipokine. Estimated glomerular filtration rate (eGFR) based on serum cys-C is calculated using the eGFR-Chronic Kidney Disease Epidemiology Collaboration (eGFR-CKD EPI cys-C equation formula).

Results: Cys-C levels in obese adolescents were higher than normoweight adolescents. In contrast, serum adiponectin levels in obese adolescents were lower than for normoweight adolescents. Interestingly, eGFR based on serum cys-C showed no difference, although eGFR in obese adolescents was lower than normoweight adolescent. Serum cys-C was positively correlated with systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass index (BMI) and waist circumference (WC). Serum adiponectin was negatively correlated with SBP, DBP, BMI and WC. SBP is a predictor factor for the increase in serum cys-C and BMI is a predictor factor in the decrease in serum adiponectin levels.

Conclusion: There is a decline in early stage kidney function and inflammation in obese adolescents as evidenced by increased serum cys-C levels and decreased serum adiponectin levels. These two biomarkers correlate with blood pressure, BMI and WC and play a role in the pathomechanism of early stage impairment of kidney function and inflammation in obese adolescents.

Keywords: adiponectin, body mass index, cystatin-C, early stage renal diseases, inflammation, systolic blood pressure

DDC 616.9201

Valentina I, Achadiyani, Adi SS, Lesmana R, Farenia R (Postgraduate Program of Anti-aging and Aesthetics Medicine, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia)

Effect of *Lactobacillus reuteri* Administration on Wrinkle Formation and Type I Procollagen Levels in UVB-Exposed Male Balb/c Mice (*Mus musculus*)

Mol Cell Biomed Sci. 2020; 4(3): 113-20

Abstract (English)

Background: Chronic Ultraviolet B (UVB) exposure causes oxidative stress that may induce damages to the collagen matrix and thus plays a role in the wrinkle formation. *Lactobacillus reuteri* is a probiotic that may exerts antioxidant effects, thus helping to reduce damages

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caused by UVB-induced oxidative stress in the skin.

Materials and Methods: Twenty-eight male Balb/c mice were divided equally into control group, UVB radiation only group, oral *L. reuteri* supplementation only group, and UVB radiation with oral *L. reuteri* supplementation group. UVB irradiation was given 3 times a week (100 seconds/exposure, within 3 cm distance) for 10 weeks, with a total dose of 166 mJ/cm². Oral *L. reuteri* supplementation (0.2 mL, 108 CFU) was provided every morning after meal via orogastric feeding tube for 10 weeks. Wrinkle formation on the dorsal skin of the mice was evaluated in accordance with the Bissett method and type I procollagen levels was evaluated by western blotting.

Results: In comparison with the group receiving only UVB irradiation, the group receiving probiotic and UVB irradiation showed significantly lower wrinkle scores (Group 1 vs. Group 3, 2.50±0.55 vs. 1.00±0.00; $p<0.05$) and significantly higher type I procollagen levels (Group 1 vs. Group 3, 0.88±0.36 vs. 1.92±0.46; $p<0.05$).

Conclusion: Results of the current study showed that *L. reuteri* supplementation may reduce wrinkle formation and increase type I procollagen production in UVB-exposed dorsal skin of male Balb/c mice.

Keywords: Lactobacillus reuteri, type I procollagen, photoaging, wrinkles, ultraviolet B

DDC 616.994

Al Azhar M, Nadliroh S, Prameswari K, Handoko, Tobing DL, Herawati C (Research and Development Department, National Cancer Center-Dharmais Cancer Hospital, Jakarta, Indonesia)

Profile of PD-1 and PD-L1 mRNA Expression in Peripheral Blood of Nasopharyngeal Carcinoma

Mol Cell Biomed Sci. 2020; 4(3): 121-7

Abstract (English)

Background: Programmed death-1 (PD-1) and programmed death ligand-1 (PD-L1) expression is associated with prognostic and respond to immunotherapy with immune checkpoint inhibitor in several solid malignancies. However, the prognostic roles of PD-1 and PD-L1 expression in nasopharyngeal carcinoma (NPC) are less clear. This study aims to investigate PD-1 and PD-L1 mRNA expression levels in peripheral blood of Indonesian NPC patients and its association with clinicopathological features.

Materials and Methods: This study used blood samples of 21 NPC patients and 10 healthy volunteers as controls. Real-time polymerase chain reaction (PCR) was used to measure mRNA expression of PD-1 and PD-L1.

Results: PD-1 mRNA expression levels were significantly lower in NPC patients (Δ CT mean: 9.65±2.04) compared to healthy individuals (Δ CT mean: 8.04±1.51) ($p=0.031$). In contrast, PD-L1 mRNA expression levels were higher in NPC patients (Δ CT mean: 6.96±1.32) compared to healthy individuals (Δ CT mean: 7.11±0.55), but the difference was not statistically significant ($p=0.554$). The expression of PD-1 was associated with tumour-node-metastasis (TNM) stage ($p=0.030$) but not associated with age ($p=1.000$), sex ($p=1.000$), body mass index ($p=0.350$), tumor stage ($p=0.338$), nodal stage ($p=0.579$), metastasis stage ($p=0.371$), and Eastern Cooperative Oncology Group (ECOG) status ($p=0.228$). Meanwhile PD-L1 expression was not associated with all clinicopathological features.

Conclusion: The PD-1 mRNA expression levels were significantly lower, while PD-L1 expression levels were higher in NPC patients compared to healthy controls. PD-1 expression was correlated with TNM stage.

Keywords: nasopharyngeal carcinoma, immune checkpoint inhibitors, PD-1, PD-L1

DDC 616.995

Yunda DK, Witjaksono F, Nurwidya F (Department of Nutrition, Faculty of Medicine, Universitas Indonesia/Dr. Cipto Mangunkusumo General Hospital, Jakarta, Indonesia)

Correlation between Protein Intake, Fat Free Mass, and Total Lymphocyte Count with Quality of Life in Pulmonary Tuberculosis Patients Undergoing Intensive Phase Treatment in Pekanbaru, Riau Province

Mol Cell Biomed Sci. 2020; 4(3): 128-34

Abstract (English)

Background: Malnutrition and tuberculosis (TB) have a bidirectional relationship, which interacts between each other. In chronic infection, there is an imbalance between protein degradation and protein synthesis which marked with the loss of fat-free mass (FFM). Malnutrition can cause the atrophy of the thymus gland resulted in the reduction of lymphocyte production. Malnutrition in TB patients will reduce the quality of life. On the other hand, a good quality of life will increase the treatment success rate and decrease the risk of morbidity and mortality.

Materials and Methods: A cross-sectional study was conducted in 12 primary health centers (PHC) chosen randomly from 23 PHC in Pekanbaru, Riau Province. The random selection was performed by using simple random sampling (random number generator). Data were collected from May until July 2019. Samples were selected using a consecutive sampling method and 72 subjects fulfilled all research criteria. The interview was used to collect basic characteristic data, dietary intake data, and quality of life score. Anthropometric measurement (body weight, body height, and FFM) and laboratory examination (total lymphocyte count) were done.

Results: Research showed median age subjects was 33 years old (18-59 years old). Most of the subjects were male (56.9%), had a middle level of education, low income, were active smokers with underweight nutritional status. More than 50% of subjects had low protein intake, low fat-free mass, normal lymphocyte count and had a good quality of life.

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Conclusion: There was a statistically significant correlation between fat-free mass with PCS ($r=0.239$, $p=0.044$), but not for protein intake and total lymphocyte count.

Keywords: fat-free mass, protein, quality of life, total lymphocyte count, tuberculosis

DDC 616.5

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Evaluating The Effect of Humidity on Adhesion Strength of Skin Adhesive

Mol Cell Biomed Sci. 2020; 4(3): 135-9

Abstract (English)

Background: Skin adhesive has been used for attaching certain medical application to the human skin for functional and/or esthetic purposes. Silicone adhesive is the most common type of skin adhesives that are recently used. This study aims to evaluate the possible effect of humidity on the performance of silicone skin adhesive.

Materials and Methods: Twenty-four silicone samples were divided into 2 main groups based on relative humidity (RH) exposure, namely 43% RH and 98% RH. Six samples from each group were tested for adhesion strength after 1 hour of adhesion, and the other 6 samples were tested after 2 hours of adhesion by conducting 180 degree peel test. The data were statistically analyzed for significant difference.

Results: The results showed that at 43% RH, the adhesion strength was higher than the 98% RH group. The results also showed that at both humidity settings the adhesion strength after the first hours of adhesion was lower than the adhesion strength after the second hour.

Conclusion: The silicone skin adhesive performance can be affected by the increase of relative humidity which needs more time of application to skin to reach the best adhesion function.

Keywords: adhesions strength, humidity effect on adhesion, silicone adhesive, skin adhesives

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Intravenous and Oral Paracetamol Have the Same Effect in Reducing Fever in Pediatric Patients

Mol Cell Biomed Sci. 2020; 4(3): 140-5

Abstract (English)

Background: The antipyretic effect of intravenous versus oral paracetamol is not well known. This study was aimed to compare the antipyretic effect of intravenous and oral paracetamol therapy to reduce fever.

Materials and Methods: This was an open-label randomized clinical trial study. The subjects were children who presented to Pediatric Ward and Emergency of Haji Adam Malik Hospital, aged from 2 months to 18 years old, with axillary temperature $\geq 38.0^{\circ}\text{C}$. Subjects were divided into two groups, group 1 received 15 mg/kg paracetamol intravenous and group 2 received the same dose of paracetamol but given through intravenous. The temperature reduction was analyzed by ANOVA, and the change in temperature was recorded at 0, 15, 30, 60, 120, and 180 minutes after drug administration.

Results: In the first group, the mean temperature was decreased ($p<0.001$) from 15 to 180 minutes after the administration of paracetamol. Nausea was documented as the adverse effect for both oral and intravenous administration groups.

Conclusion: The administration of 15 mg/kg paracetamol, either through intravenous or oral, have similar effect in reducing fever in children. Paracetamol therapy through intravenous route can be given if it cannot be given orally.

Keywords: antipyretic, pediatrics, fever, intravenous, oral, paracetamol

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