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Plasma Level of Umbilical Cord Hemeoxygenase-1 (HO-1) and Neonatal Outcome in Early Onset and Late Onset Severe Preeclampsia

Muhammad Ilham Aldika Akbar, Indah Mayang Sari, Ernawati, Aditiawarman p.54-9

Abstract

DDC 616.02774

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Investigation on Cell Surface Markers of Dental Pulp Stem Cell Isolated from Impacted Third Molar Based on International Society for Cellular Therapy Proposed Mesenchymal Stem Cell Markers

Mol Cell Biomed Sci. 2019; 3(1): 1-6

Abstract (English)

Background: Recently we have isolated and cultured dental pulp stem cell (DPSC) derived from impacted third molar (DPSC-M3). The DPSC-M3 was suggested as mesenchymal stem cell, however the cell surface markers were not completely clarified. Therefore current study was conducted to investigate the markers.

Materials and Methods: Passage 5 DPSC-M3 was cultured, labeled and examined with flow cytometer. All markers were investigated according to the proposed cell surface marker panel for the minimal identification of human mesenchymal stem cell (MSC) by International Society for Cellular Therapy (ISCT). The positive markers were cluster of differentiation (CD)90, CD73, CD105, while the negative markers were CD34, CD45, CD11b, CD19, and Human Leukocyte Antigen (HLA)-DR.

Results: Results showed that the size and granularity of DPSC-M3 were ranged from 75 to 230 and 27 to 203, respectively. The cell surface antigens examination showed that CD90, CD105 and CD73 were highly expressed (>95%), meanwhile expressions of CD45, CD34, CD11b, CD19 and HLA-DR were <2%.

Conclusion: Since the all markers expression were in accordance to the proposed cell surface marker panel for the minimal identification of human MSC by ISCT, DPSC-M3 could be suggested as an MSC.

Keywords: dental pulp, stem cell, dental pulp stem cell, ISCT, flow cytometry

DDC 616.994

Harjanti DA, Murtono C, Suryawinata K, Halim A, Wiryokusuma MF, Djitro TB (Anatomical Pathology Department, School of Medicine and Health Sciences, Atma Jaya Catholic University, Jakarta, Indonesia)

John Cunningham Virus T-Antigen Expression on Mild and Severe Dysplasia Adenomatous Polyp, Low and High Grade Adenocarcinoma of The Colon

Mol Cell Biomed Sci. 2019; 3(1): 7-12

Abstract (English)

Background: John Cunningham Virus (JCV) was involved in pre-malignant lessions and carcinogenesis of the colon. The purpose of this study was to detect and analyze JCV T-Ag expression in mild and severe dysplasia adenomatous polyp as well as low and high grade adenocarcinoma of the colon.

Materials and Methods: This study used analytic descriptive, cross sectional approach. The samples' paraffin blocks were taken from colon adenomatous polyp cases (all grades of dysplasia) and cases of colon adenocarcinoma (all degrees) at Anatomical Pathology Laboratory, School of Medicine, Atma Jaya Catholic University of Indonesia from 2010-2014 (5 years period). Samples were reviewed from HE slides to determine histopathologic diagnosis, grades of dysplasia and grading. We performed immunohistochemistry staining with monoclonal antibody anti–SV 40-T-Ag to detect JCV T-Ag expression.

Results: We found 7 cases of colon adenomatous polyp, of which 4 (57%) were mild dysplasia and 3 (43%) were severe dysplasia. Positive expression of JCV T-Ag was detected in 1 (14%) mild dysplasia case. Data analysis using Fischer's Exact Test was p>0.05. We also found 16 cases of colon adenocarcinoma. 14 cases (87.5%) of low grade variant and 2 cases (12.5%) of high grade variant. Positive expression of JCV T-Ag was detected in 2 (12.5%) low grade cases. Data analysis using Fischer's Exact Test was p>0.05.

Conclusion: There was no difference of JCV T-Ag expression in colon adenomatous polyp (mild-severe dysplasia) and colon adenocarcinoma (low-high grade) cases at Anatomical Pathology Laboratory School of Medicine, Atma Jaya Catholic University of Indonesia 2010-2014.

Keywords: colon adenomatous polyp, adenocarcinoma, JCV T-Ag

DDC 616 9362

Nurdianto AR, Arwati H, Dachlan YP, Febiyanti DA (Faculty of Medicine, Airlangga University, Surabaya, Indonesia)

The Relationship of Hemoglobin, Interleukin-10 and Tumor Necrosis Factor Alpha Levels In Asymptomatic Malaria Patients in Trenggalek, Jawa Timur, Indonesia

Mol Cell Biomed Sci. 2019; 3(1): 13-6

Abstract (English)

Background: Malaria is still a universal health problem, especially in tropical countries because of high morbidity and mortality rates. Infection by *Plasmodium falciparum* and *Plasmodium vivax* could result in asymptomatic disease of malaria and be found in Trenggalek, Jawa Timur. Differences in pathogenesis among affected individuals are affected by many factors, and the immune system is one of them. Among substances involved in the malarial immunity is Tumor Necrosis Factor (TNF)- α and Interleukin (IL)-10, produced by the body's defense system as the reaction to the parasite. Therefore a study was designed to detect the level of TNF- α and IL-10 in asymptomatic malaria patients.

Materials and Methods: A cross-sectional study was conducted. Thirty male asymptomatic malaria subjects, age 21 to 60 years were selected. Blood from each subject was collected and the levels of TNF- α and IL-10 were analyzed using enzyme-linked immunosorbent assay (ELISA) method. Significant values considered at p<0.05.

Results: There was an increased level of TNF- α with the average of 218.760 pg/ μ L, and an increased level of IL-10 with an average of 257.574 pg/ μ L in asymptomatic malaria subjects. In normal person IL-10 level is 12.6 (8.5-16.7) pg/ μ L and the levels of TNF- α in normal person is 0-1.5 pg/ μ L because they are not produce. There was a positive correlation of TNF- α with IL-10 (r=0.332; p>0.05), and positive correlation between TNF- α and the rate of hemoglobin (r=0.002; p>0.05). IL-10 was correlated negatively with the rate of hemoglobin (r=-0.363; p<0.05).

Conclusion: The results from this study conclude that TNF-α and IL-10 levels increase in asymptomatic malaria subjects.

Keywords: asymptomatic malaria, TNF-α, IL-10, parasite, hemoglobin

DDC 616.343

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Microbial Patterns and Antimicrobial Susceptibility on Pediatric Patients with Pressure Ulcers

Mol Cell Biomed Sci. 2019; 3(1): 17-21

Abstract (English)

Background: A pressure ulcer (PU) is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with sharp surface. Several studies have found that PU is also a common problem in the pediatric population. Infection at PU sites is the most common complication, where PU can host resistant microorganisms and can turn into a local infection that is a source of bacteremia in hospital patients. This study aims to determine the most common bacteria and antimicrobial susceptibility at the site of PU in pediatric patients that serve as baseline data in Haji Adam Malik Hospital.

Materials and Methods: A cross-sectional study was carried out in July-December 2017, involving 30 PU pediatric patients. For each subject, swab from ulcers were cultured in microbial laboratory to determine the microbial pattern and antimicrobial susceptibility.

Results: The most common age group was 0-3 (53.3%), the highest gender was male (60%), the most common type was type 2 (46.7%), the main location was occipital (30%) and the most common undelying diseases were hydrocephalus (16.6%). The most common microbial pattern in PU pediatric patients is *Acinetobacter baumannii* (40%). The highest sensitivity is vancomycine for gram positive bacteria and amikacine for gram negative bacteria.

Conclusion: The most common microbial pattern in PU pediatric patients in Haji Adam Malik Hospital is *Acinetobacter baumannii* (40%). The highest sensitivity is vancomycine for gram positive bacteria and amikacine for gram negative bacteria.

Keywords: pressure ulcer, pediatric, microbial pattern, antimicrobial susceptibility

DDC 615.366

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Soymilk Formula Increases Estrogen and Reduces Testosterone Level in Male Infant White Wistar Rats

Mol Cell Biomed Sci. 2019; 3(1): 22-5

Abstract (English)

Background: Children's immunity system is relatively lower on first year of life, causing atopic babies, leading to allergy. Ideally, newborn babies are given breast milk as main food source on the first 6 months, but often being replaced with cow milk which can induce Cow's Milk Protein Allergy. For the alternative can replace it with soymilk formula which contains phytoestrogen from isoflavon, which works just like estrogen. The aim of this study to determine whether administration of soymilk formula is capable on increasing estrogen level and reducing testosterone level on male infant white Wistar rats (*Rattus norvegicus*).

Materials and Methods: This research used post test only control group design. Samples were consisted of 36 infant male white Wistar rats aged 7 days, weighing from 10-15 grams, divided into 2 groups, control group which was given cow's milk and intervention group which was given soymilk. Each group were given intervention with the dose 5% of BW (grams), given twice-a-day orally for 21 days, and subsequently in the morning their blood samples were taken to examine the level of estrogen and testosterone hormone.

Results: The study showed that the level of estrogen on intervention group was significantly higher than the control group with mean estrogen level of 0.55±0.03 pg/mL in the control group and 0.82±0.01 pg/mL in the intervention group, while the mean testosterone level was significantly lower on intervention group compared with control group (*p*<0.05) with 3.25±0.15 ng/mL on control group and 2.36±0.22 ng/mL on intervention group.

Conclusion: Soymilk was able to increase estrogen level and reduce testosterone level on male infant white Wistar rats (*Rattus norvegicus*).

Keywords: soymilk formula, estrogen, testosterone, male infant rats

DDC 616.02774

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The Effect of Human Platelet-Rich Plasma and L-Ascorbic Acid on Morphology, Proliferation, and Chondrogenesis Ability towards Human Adipose-Derived Stem Cells

Mol Cell Biomed Sci. 2019; 3(1): 26-33

Abstract (English)

Background: Microtia is a congenital malformation in the external ear due to cartilage defect. Adipose-derived stem cells (ADSC) is promising cells to develop cartilage tissue engineering for microtia. In this study, we focused on proliferation and chondrogenesis of ADSC in three different media, which consist of 10% fetal bovine serum (FBS), 10% FBS with L-ascorbic acid, and 10% human platelet rich plasma (PRP).

Materials and Methods: ADSC were induced to differentiate into adipocytes, chondrocyte and osteocytes. ADSC morphology, proliferation and population doubling time was compared in three different media and analysed. Observation and alcian blue staining were done every 7 days to assess chondrogenic potency of ADSC from each treatment.

Results: Isolated ADSC were able to differentiate into adipocytes, osteocytes and chondrocytes. ADSC in all group have fibroblast-like morphology, but cells in 10% FBS and 10% FBS with LAA group were flattened and larger. ADSC in 10% PRP group proliferates faster than 10% FBS with and without LAA. PDT values of ADSC were 34 hours, 44 hours and 48 hours, respectively for 10% PRP, 10% FBS with LAA and 10% FBS group. Alcian blue staining revealed that ADSC in 10% FBS with LAA and 10% PRP were able to proceed to chondrogenesis when cultured time were prolong up to 21 days, but not with ADSC in 10% FBS.

Conclusion: We conclude that adding 10% FBS with LAA or 10% PRP into medium culture can support proliferation and chondrogenesis of ADSC.

Keywords: human ADSC, PRP, L-ascorbic acid, proliferation, chondrogenesis

DDC 616.0797

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Cytotoxic Activity of Methoxy-4'amino Chalcone Derivatives Against Leukemia Cell Lines

Mol Cell Biomed Sci. 2019; 3(1): 24-41

Abstract (English)

Background: Chemotherapy is a common treatment for leukemia as well as in other cancer treatment. The lack of tumor selectivity and development of multi-drug resistance by chemotherapy caused the development of new strategy in cancer treatment become a pressing need. This study was performed to evaluate the anticancer activity and selectivity of seven derivatives of chalcones against K562 and HL 60 leukemia cell lines.

Materials and Methods: The cytotoxicity of chalcone's seven derivatives (compound 1-7) was tested by using 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxyme-thoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium (MTS) method. The percentage of cell mortality data was calculated then the IC50 was analyzed using probit analysis (SPSS 17). The selectivity index (SI) then calculated from IC50 ratio of normal lymphocyte cells and cancerous cells line (HL-60 and K562).

Results: The IC $_{50}$ of almost all seven tested compounds were lower in HL-60 cell lines (ranged from 1.57 to 9.63 µg/mL) than K562 cell lines (ranged from 5.87 to 52.56 µg/mL), except for Compound 7 (5.87 \pm 0.15 µg/mL). The number and position of methoxy groups in chalcone derivatives influenced the anticancer and cancer selectivity of chalcone derivatives.

Conclusion: The results revealed that the number and position of methoxy groups in chalcone derivatives influenced the anticancer and cancer selectivity of chalcone derivatives.

Keywords: anticancer, chalcone derivatives, methoxy-4'-amino chalcone, leukemia, cytotoxic, selectivity

DDC 616 853

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Correlation Between Pyridoxal 5'-Phospate Level And Valproic Acid In Epilepsy Children

Mol Cell Biomed Sci. 2019; 3(1): 42-7

Abstract (English)

Background: It is important to maintain the adequate level of vitamin B6 to ensure stable metabolism. Vitamin B6 serum level might decreased by absorption disturbance or increasing demand. Valproic acid increase the synthesis of serum GABAergic in the other hand vitamin B6 is required as cofactor for gamma-amino butyric acid (GABA) formation. The dosage and duration of valproic acid therapy might be correlated with vitamin B6 serum level. The aim of this study is to know the correlation between vitamin B6 serum level against dosage and duration of valproic acid therapy in children with epilepsy.

Materials and Methods: This is a cross sectional study to investigate the correlation between vitamin B6 serum level against dosage and duration of valproic acid therapy. The level of vitamin B6 serum was determined by checking vitamin B6 active form in serum, pyridoxal 5'-phospate (PLP).

Results: In this study, 37 epilepsy children with valproic acid duration therapy more than 3 months was enrolled. Fifty six percent epilepsy children were male, commonly on children age 1-5 years old. Spearman correlation coefficient test showed a significant weak negative correlation between vitamin B6 serum level and dosage of valproic acid (r=-0.35; p=0.03), and very weak negative correlation with valproic acid duration therapy (r=-0.08; p=0.59), however it was not significant.

Conclusion: There was a significant weak negative correlation between vitamin B6 serum level and very weak negative correlation with valproic acid duration therapy, but not significant in children with epilepsy.

Keywords: correlation, valproic acid, vitamin B6

DDC 616.61

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Correlation between the Inflammation Factors and Intima-Media Thickness in Patients with End-Stage Renal Disease (ESRD) on Regular Hemodialysis

Mol Cell Biomed Sci. 2019; 3(1): 48-53

Abstract (English)

Background: Several emerging problems of regular hemodialysis (HD) including cardiovascular complication or atherosclerosis formation caused by chronic inflammation. High sensitive C-reactive protein (hs-CRP) and intima-media thickness (IMT) of the carotid artery can be applied as atherosclerosis progressivity marker. This study was designed to investigate the relationship between some inflammatory factors, including hs-CRP, interleukin (IL)-6, oxidized-low-density lipoproteins (LDL), with IMT among end-stage renal disease (ESRD) patients. This was the first study in Indonesian population.

Materials and Methods: This cross-sectional study was performed on ESRD patients who performed regular HD at Hemodialysis Unit of Dr. Kariadi Hospital and Telogorejo Hospital Semarang between October 2009 and April 2010. This was a preliminary report for the cohort study.

Results: Seventy-eight HD subjects were enrolled in this study, with mean age of 49.8 years old. Mean HD duration was 25.5±32.16 months. The mean carotid artery wall thickness was 0.64±0.149 mm. IL-6, hs-CRP, and ox-LDL level were higher in IMT group ≥0.5 mm than IMT group <0.5 mm. There was a significant correlation between hs-CRP (prevalence ratio (PR)=1.3; 95% confidence interval (CI)=1.02-1.7; p-value=0.01) as well as IL-6 (PR=1.5; 95% CI=1.1 -2.0; p-value<0.001) and IMT wall thickness. The oxidized-LDL level was not a significant factor to be associated with IMT. The cut-off value for hs-CRP and IL-6 to predict IMT progressivity was 2.8 mg/L and 2.88 mg/L, respectively.

Conclusion: There was a significant correlation between IL-6 and hs-CRP levels and IMT. There was not significant correlation between oxidized LDL and IMT.

Keywords: hemodialysis, atherosclerosis, IMT, IL-6, hs-CRP, Oxidized-LDL

DDC 618.36132

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Plasma Level of Umbilical Cord Hemeoxygenase-1 (HO-1) and Neonatal Outcome in Early Onset and Late Onset Severe Preeclampsia

Mol Cell Biomed Sci. 2019; 3(1): 54-9

Abstract (English)

Background: Many studies had discovered that early onset severe preeclampsia (EO-PE) has worst maternal and neonatal outcome compared to late-onset type (LO-PE), related to its placental involvement. Severe preeclampsia was defined as newly onset severe hypertension developed after 20 weeks gestation in previously normal blood pressure women, with coexistence of proteinuria, or maternal organ or uteroplacental dysfunction. Hemeoxygenase-1 (HO-1) is an enzyme with multiple effect which is protective to pregnancy.

Materials and Methods: The total study subjects were 40 pregnant women consisted of 10 EO-PE, 10 normal early onset pregnancy (EO-NP), 10 LO-PE, and 10 normal late onset pregnancy (LO-NP). As much as 5 cc of plasma from umbilical cord was taken as soon as the baby was born, and the HO-1 level was examined by enzyme-linked immunosorbent assay (ELISA). The primary outcome were umbilical cord HO-1 level and neonatal composite morbidity (low Apgar score, low birthweight, length of stay >5 day, respiratory distress syndrome, jaundice and neonatal death).

Results: The plasma level of HO-1 in EO-PE subjects were lower than EO-NP (0.96 ± 0.37 ng/mL vs. 2.43 ± 0.58 ng/mL, p<0.001). There were no significant differences in the level of HO-1 in LO-PE and LO-NP (2.18 ± 1.07 ng/mL vs. 3.02 ± 0.64 ng/mL, p=0.277). Plasma level of umbilical cord HO-1 of EO-PE patients was lower compared to LO-PE (0.96 ± 0.37 ng/mL vs. 2.18 ± 1.07 ng/mL, p=0.034). Neonatal outcome of EO-PE was worse than EO-NP (p=0.033), and LO-PE (p=0.003), while in LO-PE did not different with LO-NP (p=0.211).

Conclusion: EO-PE is associated with lower plasma umbilical cord level of HO-1 and worse neonatal outcome compared to LO-PE. This indicating abnormal placental blood vessel development, placental ischemia in EO-PE, lead to reduced uteroplacental perfusion and significantly worse neonatal outcome compared to LO-PE.

Keywords: severe preeclampsia, early onset preeclampsia, late onset preeclampsia, hemeoxygenase-1





































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