Suitability of MDA, 8-OHdG and Wildtype p53 as Genotoxic Biomarkers in Metal (Co, Ni dan Cr) Exposed Dental Technicians: A Cross-Sectional study

Titiek Berniyanti
Dental Public Health, Faculty of Dental Medicine University of Airlangga, Surabaya, East Java, Indonesia

Objectives This study intended to investigate whether the Dental Technician working in area polluted by Co, Ni and Cr, could contribute to the high incidence of cancer exposed at the occupational.

Methods A cross-sectional study was conducted among dental technicians after ethical clearance. Occupational exposure to metal was assessed by measuring the level of Co, Ni, Cr and control by AAS, MDA is used as biological biomarker of lipid peroxidation that described the degree of oxidative stress were measure by TBARS test, 8-hydroxy-2-deoxyguanosine (8-OHdG) and p53wildtype were measured each with an Elisa check kit and analyzed saliva with indirect ELISA as a biological response to various forms of stress.

Results Comparative statistical analysis between Co, Ni, and Cr levels in the exposed group with the control group, MDA, 8-OHdG, and Wildtype p53 in blood serum of dental technicians all showed significant differences (p < 0.05). A significant correlation was shown between 8 OHdG with Cr: (p = 0.024 r = 0.355), with Co: (p = 0.034, r = 0.337), with p53: (p = 0.001 r = -0.103), and MDA with Co: (p = 0.033, r = 0.337).

Conclusions MDA, 8-OHdG and p53 can be used as genotoxic biomarkers in the metal exposed group, all showed significant differences (p < 0.05) compare to metal levels, that they can accurately reflect the degree of genetic damage.

Bakuchiol Is an Effective Antimicrobial Agent in Maintaining Oral Health of the Elderly Adults

Fathilah Abdul Razak, Shan Gunasegar, Marina Mohd Bakri, Norintan Ab Murat, Anand Ramanathan, Mohammad Zakir Hossain

Oral & Craniofacial Sciences, University of Malaya, Kuala Lumpur, Federal Territory, Malaysia, Community Oral Health & Clinical Prevention, UNIVERSITY OF MALAYA, Kuala Lumpur, Federal Territory, Malaysia, Oral & Maxillofacial Clinical Sciences, University of Malaya, Kuala Lumpur, Federal Territory, Malaysia, Oral Physiology, Faculty of Dentistry, Matsumoto Dental University, Shiojiri, Hirokagobara, Japan

Objectives This study aimed to determine the antimicrobial activity of active compound bakuchiol on candidal population of the elderly adults. The action mechanism of bakuchiol may suggest its potential as an effective agent for the maintenance of oral health in this target group.

Methods Oral swab specimens were obtained from the elderly adults. The candidal presence was conventionally determined using selective CHROM agar. A cell suspension at the determined proportion was prepared and its susceptibility towards bakuchiol was assessed based on the minimal growth inhibitory concentrations, MIC50 and MIC90. The minimal biofilm eliminating concentration (MBEC) was determined using crystal violet dye technique. Candidal resistance to bakuchiol was indicated by the percentage of viable cells following treatment with bakuchiol, which was quantitatively estimated using XTT assay. Real time PCR was performed to verify the influence of bakuchiol on HWP1 gene that is associated with candidal adhesion during biofilm formation.

Results The MIC50 and MIC90 of bakuchiol towards oral candida were determined at 15.6 and 31.3 μg/ml, respectively. Within these concentrations bakuchiol was found to reduce both the biomass and viable cell population of biofilm by 54.22% and 44.23%, respectively (P < 0.05). Bakuchiol also down regulated the expression of HWP1 gene at the MIC50.

Conclusions Bakuchiol exhibited antimicrobial activity on candidal population of the elderly adults by suppressing its growth and interrupting formation of its biofilm. Hence, suggest its potential as an antimicrobial agent for use in the maintenance of oral health in the elderly adults.

The Absorbance Determination of Biofilm Formations by Candida albicans that Induced with Lactosa, Glucosa, Iron and Protein (Soy)

Indah L. Kriswandini
Oral Biology, Airlangga University, Surabaya, East Java, Indonesia

Objectives Determine the absorbance thickness of biofilm formation from Candida albicans induced by various materials: Lactose, Glucose, Iron and Protein (Soy).

Methods Growing Candida albicans (C.a) on Saboraud Dextrose Agar (DAS) with 4 treatments. Treatment A: C.a induced by 5% Lactose; Treatment B: C.a with 5% glucose induction; Treatment C: C.a with Iron (FeCl₃ 10%) induction and Treatment D: C.a with Soy Protein induction. Whereas E is the growth control of C.a without induction. Each treatment is 6x replicated, then stained with Crystal Violet. Test using microplate assay.

Results Average OD reads with a wavelength of 492 nm, for Treatment A = 0.279; B = 0.197; C = 0.177; D = 0.297 and E = 0.053. Biofilm C.a induced by Protein and Lactose materials has a much thicker absorbance than the C.a-induced biofilm with Glucose and Iron.

Conclusions The thickness of absorbance of biofilm formation of C.a is influenced by growth demand factor of C.a.