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Abstracts

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PP8C-17

Antitumor activity of *Allium hirtifolium* (Iranian shallot) and allicin: microtubule-interaction properties and effects on cancer cell lines

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The genus Allium, has potent antitumor activity against many types of tumors, however, its molecular target and mechanism of anti proliferative activity is not clear. The present study aims at defining the anti-microtubule activities of A. hirtifolium which belongs to genus Allium. The effects of A. hirtifolium extracts and it's Allicin on the proliferation of HeLa (cervical cancer), MCF7 (human,caucusion,breast,adenocarcinoma) and L929 (mouse,C3H/An,connective) cell lines and also on nerve cell microtubules has been examined in this study. A. hirtifolium showed growth inhibitory activity against HeLa and MCF^{-7} cells with IC (50) value of 20 and 24 μg/ml for 72 hour. Cell growth inhibition was measured by MTT after treatment with *A. hirtifolium*. Microtubule protein (MTP) was prepared from sheep brain through two cycles of polymerizatinon-depolymerization in a high molarities buffer. Inhibition of MTP polymerization induced by *A. hirtifolium* was determined by a turbidity measurement and a sedimentation assay. *A. hirtifolium* was tested for its ability to bind to tubulin as a ligand through turbidimetry assay and changed the time and form of MTP polymerization then investigated by Transion Electron microscopy. *A. hirtifolium* clearly showed a cell growth inhibition on several human cancer cell lines at non-toxic concentration (lower than 1 mg/ml).With respect to the cell lines studied.IC50 values varied from 20 in Hela to 24 μg in MCF-7 . The necessary concentration of *A. hirtifolium* to inhibit the assembly of microtubule proteins by 50% was 1.2 mg/ml, while an inhibition higher than 80% was observed in the presence of 4 mg/ml *A. hirtifolium*.

PP8C-18

Diversity in genes responsible for lifestyle-related diseases in the Asia-Pacific region

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Introduction: In Asia-Pacific countries, both environmental modernization and hereditary traits of Mongoloid have been reported to cause rapid increase in lifestyle-related diseases (LRD). Single nucleotide polymorphism (SNPs) on genomic DNA can be used as a hereditary trait factor. Many reports have been published about cause-effect relationships between SNPs-LRD; however, reproducibility of those responsive factors is low. A decision-tree method of complexity-model was employed to select LRD responsive factors.

Methods: Genomic DNA was collected from four Asia-Pacific regions including Thai, Palau, Mongol and China. Three indices of LRD (BMI, body fat, and serum leptin levels) were classified according to published criteria. WEKA Machine-learning system was used as decision-tree software. Age was added as a factor with different dimension. Selected factors were validated by ANOVA and Levine's test for equality of variance.

Results: In Thai-males, WEKA system nominated GLUT1 (glucose-transporter 1)-SNP as most-responsive factor to body fat, which was followed by USF1-SNP (transcription-factor for lipid metabolism), but age was not selected as responsive factor. Differences between actual values of each genotype were validated ($P = 0.002$ for GLUT1 by Levene's, $P = 0.071$ for USF1 by ANOVA). Nominated factors for leptin levels of Thai-males were USF1 and age. Factors for leptin levels of Thai-females were age, PON1 (paraoxonase, high-density-lipoprotein associated enzyme), KCNJ1 (potassium non voltage-gated channel) and DGAT (diacylglycerol acyltransferase). Convincing responsive factors were not selected from mixed data of four regions.

Conclusions: Decision-tree-analysis successfully selected the convincing results. Responsive-factors differed by ethnic group and gender.

PP8C-19

Melissa officinalis extract inhibiting the formation of advanced glycation end-products

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Nonenzymatic glycation results in the formation of Advanced Glycation End products (AGEs). AGEs have been implicated in diabetes related complications such as retinopathies, nephropathies and neuropathies. Glycation induces an alpha helix to beta-sheet transition in secondary structure of proteins. These cross beta-structures are recognized by receptor of AGE (RAGE) on the surface of some cells, such as microglial cells and induce inflammation. In an attempt to find a natural pharmaceutical, which might inhibit glycation of proteins alpha helix to beta-sheet transition, a water-soluble fraction was obtained from *Melissa officinalis* which has shown to have clinical benefit. We incubated Bovine Serum Albumin (BSA) with glucose in the presence and absence of *Melissa officinalis* extract and the effects of this fraction on the formation of advanced glycation end-products and structure of protein were studied. The level of glycation, change in structure of proteins and their binding to RAGE receptor of microglial cells were assessed by the methods of specific fluorescence, Congo Red Binding assay, circular dichroism, ligand blotting and Western blot analysis. Based on our results, we found that water-soluble extract of *Melissa officinalis* can slow down the formation of glycated proteins and transition in their secondary structure. BSA incubated with glucose in the presence of extract of *Melissa officinalis* , has much lower binding affinity for RAGE receptor.

PP8C-20

Evaluation of iodine sufficiency in lactating mothers and effect of breast milk iodine on infants

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Introduction: Iodine is essential for normal growth, mental development, and survival of infants. The main source of iodine for breastfeeding infants is the iodine found in human milk.

Objective: This study was carried out to evaluate iodine sufficiency in lactating mothers in Iran and effect of breast milk iodine on infant growth.

Methods and Materials: A total 130 healthy and non-smoker lactating mothers and their singletons, full-term, with appropriate weight for gestational age infants (71F, 59M) participated in the study.The women completed a 3 day dietary record, and iodine content of consumed food was determined. Infants' anthropometric data were checked monthly from one month to 6 month old. At the first admission, 10 ml of each mother's milk, for the measurement of iodine concentrations, were collected, and frozen immediately at -20C until analysis was carried out. Data were analyzed by SPSS 11.5 software.

Results: The mean (±SD) of iodine content of mothers' nutrition were 317 μg/day (±42.81), and the mean (±SD) of the breast milk iodine concentration were 183.5 μg/l (±178.3). Breast milk iodine concentration was less than 50 μg/l in 30% of subjectes. No statistically significant difference was observed between infant growth and iodine breast milk, except for head circumference at the age of 1–3 months ($P < 0.05$).We did not find any relationship between of the iodine breast milk level and mothers' nutrition iodine level.