

CURRENT TOPICS IN NUTRACEUTICAL RESEARCH

Volume 13

Number 1

February 2014

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- 1-12 HEALTH EFFECTS OF SELENIUM SUPPLEMENTATION: CHEMICAL FORM AND DOSE HOLD THE KEY
Kamna Saini, Sudhir K. Tomar, Bharat Bhushan, Babar Ali and Vikas Sangwan

ABSTRACT: *Selenium (Se) has emerged as an essential micronutrient but its role in cancer prevention, immunomodulation, thyroid functioning and viral inhibition continues to remain inconclusive. The aim of this review is to dwell upon various factors responsible for mixed results arising out of Se supplementation trials. Some researchers have used inorganic form of Se, sodium selenite, which is less bioavailable and may be toxic if used for prolonged period, while others have opted for organic form, selenomethionine, which may incorporate non-specifically into proteins. In recent times, other organic forms, methylselenocysteine and selenocysteine, being less toxic, more bioavailable and endowed with greater therapeutic value against cancer have attracted the attention of research community. Moreover, appropriate dose (upto 200µg Se per day) may hold the key to bring perceptible beneficial health effects. Further, subjects used in trials should have low plasma Se levels for if they are already having its adequate level then supplementation is likely to be less effective. We conclude that the health effects of Se may largely depend upon its chemical form, dosage and Se-status of population being supplemented. Hence, these factors need to be taken in to account for future studies, trials of disease prevention and treatment by Se supplementation.*

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- 13-22 COMPARISON OF THE HEPATO-PROTECTIVE EFFECTS OF GENISTEIN AND GLUCURONE IN MICE TREATED WITH ACETAMINOPHEN
Yuan-jing Fan, Rui-huan Wang, Ting Huang, Di Cao, Yu Rong, Ling Zhang, Wan-ling Dong and Yong-kang Ye

ABSTRACT: *The effect of genistein and glucurone on the relationship between glucuronidation and the activation of uridine diphosphate glucuronosyltransferases (UGTs) in mice with acetaminophen (APAP)-induced liver toxicity was investigated. The animal experimental results showed that genistein significantly ameliorated the APAP-induced increase in the levels of the biomarkers, alanine aminotransferase, aspartate aminotransferase and lactate dehydrogenase, and that glucurone treatment did not significant affect those levels compared with APAP treatment. CYP2E1 was inhibited by genistein, and the levels of GSH were reinstated rapidly under the protection of genistein during APAP-induced hepatic injury. The effect of genistein on the activation of UGTs and the expression of UGT mRNAs was evaluated; the results showed that genistein accelerated and promoted APAP glucuronidation and antioxidant activities. These findings suggest that genistein might prevent APAP-induced liver toxicity by modulating the activities of antioxidant and metabolic enzymes, whereas glucurone did not exhibit protective activity in this study.*

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- 23-32 OMEGA-3 FATTY ACIDS/VITAMIN E BEHAVE SYNERGISTICALLY ON ADIPONECTIN RECEPTOR-1 AND ADIPONECTIN RECEPTOR-2 GENE EXPRESSIONS IN PERIPHERAL BLOOD MONONUCLEAR CELL OF CORONARY ARTERY DISEASE PATIENTS
Atena Ramezani, Abolghasem Djazayeri, Fariba Koohdani, Ebrahim Nematipour, Mohammad Hassan Javanbakht, Seyed Ali Keshavarz, Ezzattollah Golalizadeh, Ramin Mazaheri Nezhad Fard and Mahmoud Djalali

ABSTRACT: *Reducing the levels of adiponectin receptors, AdipoR1 and AdipoR2 can reduce the ability of adiponectin in preventing inflammatory processes. Therefore, researches need to find a way to increase the gene expression of adiponectin receptors for the treatment of cardiovascular diseases. A randomized, double-blind, placebo controlled trial was conducted on 67 CAD male patients. Participants received 4g/day ω 3 plus 400IU/day vitamin E (OE) or 4g/day ω 3 plus vitamin E placebo (OP) or both ω 3 and vitamin E placebos (PP) for two months. The Gene expression of adiponectin receptors in PBMCs and serum high-sensitivity C-reactive protein in serum were measured. Consumption of omega-3 fatty acids significantly reduced the serum level of hsCRP as well as consumption of combined omega-3 fatty acids and vitamin E supplements. Gene expression of AdipoR2 significantly increased in OP and OE groups. Consumption of combined omega-3 fatty acids and vitamin E had a significant effect on the gene expression of AdipoR1. However, omega-3 fatty acids did not change the gene expression of AdipoR1 significantly. Administration of omega-3 fatty acids with or without vitamin E for two months results in significant increases in the gene expression of adiponectin receptors and hence improves serum levels of inflammatory process in CAD patients.*

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- 33-40 EFFECTS OF ALPHA-LIPOIC ACID SUPPLEMENTATION ON CLINICAL STATUS AND ANTHROPOMETRIC INDICES IN WOMEN WITH RHEUMATOID ARTHRITIS
B. Pourghasem Gargari, S. Kolahi, P. Dehghan, A. Khabbazi and E. Mirtaheri

ABSTRACT: *Alpha-lipoic acid (ALA) is known as a potent antioxidant with anti-inflammatory effects. Also, recent studies have shown its lowering effect on weight. However, studying the effects of ALA in Rheumatoid arthritis (RA) has been noticed rarely. Rheumatoid arthritis (RA) is an inflammatory disease often accompanied by functional disability, lower physical activity and consequent overweight. Therefore, we examined ALA effects on both clinical status and anthropometric indices in women with RA. RA patients (n=70) were randomly assigned 1:1 to receive either ALA (1200 mg/day) or placebo for 8 weeks. Fasting blood samples were taken before and after the study to analyze serum rheumatoid factor (RF) and high sensitive C-reactive protein. Also, swollen and tender joints were examined to evaluate clinical status based on disease activity score in 28 joints (DAS28). Anthropometric parameters (weight, body mass index, waist circumference and waist/hip ratio) were assessed at baseline and end point. There were significant reductions in DAS28 ($p=0.015$), RF ($p=0.021$) and waist circumference ($p=0.022$) in patients receiving ALA. However, changes in clinical variables (DAS-28 and RF) and anthropometric parameters (Weight, BMI, waist circumference and waist/hip ratio) in ALA-treated group were not statistically significant compared with placebo-treated group. This study showed that ALA may have potential beneficial effects in RA patients. However, more comprehensive studies are needed to determine the effects of this promising antioxidant in RA.*

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- 41-46 SEPARATIONS AND PURIFICATION OF SOLANESOL FROM TOMATO LEAVES USING MICROWAVE-ASSISTED EXTRACTION
Tongwu Zhou and Tianxiu Wu

ABSTRACT: *Solanesol is a long-chain terpenoid alcohol that is used in the treatment of some diseases. To seek an effective extraction method of solanesol from tomato leaves, microwave-assisted extraction (MAE) was studied and shown to be superior to conventional methods. Using MAE, the highest yield was obtained when the extraction solvent was ethanol; specifically, the ratio of raw material-to-solvent, the extraction time, the temperature, and the microwave irradiation power were 1:15 (g/ml), 30 min, 55°C, and 0.6 KW, respectively. The average extraction yield of solanesol was 91.82%, with the relative standard deviation (RSD) < 1.34%. Through HPD300 macroporous resin column chromatography and recrystallization, the purity of solanesol reached up to 96.97%. Due to the high yield and purity, the extraction and purification process of solanesol will probably soon be applied in industrial processes.*

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- 47-54 INTRADUODENAL INJECTION OF HEAT-KILLED LACTOBACILLUS BREVIS SBC8803 MODULATES AUTONOMIC NEUROTRANSMISSION IN THE GUT: INVOLVEMENT OF VAGAL AFFERENTS AND SEROTONIN RECEPTORS
Yuko Horii, Yasukazu Nakakita, Yoshiyuki Fujisaki, Hiroataka Kaneda, Tatsuro Shigyo and Katsuya Naga

ABSTRACT: *Previously, we found that intraduodenal administration of heat-killed Lactobacillus brevis SBC8803 (SBC8803) elevates both the efferent gastric vagal nerve activity (efferent GVNA) and the afferent intestinal vagal nerve activity (afferent IVNA) in rats. In this study, the effects of vagotomy and serotonin (5-HT) receptor antagonists on the above changes due to SBC8803 were examined in rats to clarify the mechanism. It was found that the elevation of efferent GVNA induced by SBC8803 was eliminated by subdiaphragmatic vagotomy, and inhibited by intracerebroventricular but not intravenous administration of ketanserin (5-HT₂ antagonist). Moreover, both the efferent GVNA and the afferent IVNA elevations were suppressed by intracerebroventricular administration of granisetron (5-HT₃ antagonist). Combining this with our previous findings that granisetron can produce the same effects intravenously, these findings suggest the following: 1) the efferent GVNA enhancement requires afferent vagal nerves, central but not peripheral 5-HT₂ receptors, and both central and peripheral 5-HT₃ receptors, and 2) the afferent IVNA enhancement requires central and peripheral 5-HT₃ receptors. Moreover, these results implicate the afferent IVNA in the mechanism of the SBC8803-induced increase in efferent GVNA.*

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EFFECT OF VITAMIN D SUPPLEMENTATION ON THIOREDOXIN BINDING PROTEIN 2 GENE EXPRESSION IN PATIENTS WITH DIABETES TYPE 2

Esmaeil Yousefi Rad, Mohammad Javad Hosseinzadeh Attar, Fariba Koohdani, Ali Akbar Saboor-Yaraghi, Mohammad Reza Eshraghian, Mohammad Hassan Javanbakht, Somayeh Saboori, Maryam Chamari, Mahnaz Zarei and Mahmoud Djalali

ABSTRACT: *Diabetes type 2 is an oxidative stress related disease. This randomized controlled trial was done to evaluate the effect of vitamin D supplementation on thioredoxin binding protein 2 (TBP-2) gene expression in patients with type 2 diabetes. Subjects of this study consist of 28 patients with type 2 diabetes who received 100mg (4000 IU) vitamin D and 30 diabetic patients who received placebo for two months. The effect of vitamin D on gene expression of TBP-2 in PBMC cells was measured by RT-PCR at the beginning and at the end of the study. The results of this study showed no significant differences in TBP-2 gene expression between 2 groups, but a significant decrease in serum TBP-2 concentration in vitamin D receiving group at the end of supplementation. It seems that vitamin D supplementation has no effect on the TBP-2 gene expression in PBMC cells.*