

## CURRENT TOPICS IN NUTRACEUTICAL RESEARCH

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**Ahmad Afaghi, Amir Ziaee, Shahyar Mesbah Kiaee and Nima Hosseini [ABSTRACT]**

Current Topics in Nutraceutical Research 7 (3/4): 109-112

109-112 CHOLECALCIFEROL SUPPLEMENTATION IS ABLE TO MODULATE HYPERTENSION AND PLASMA ALDOSTERONE IN SHRSP RATS

Rosane de Souza Santos and Lucia Marques Vianna

**ABSTRACT:** *This work investigated the action of cholecalciferol supplementation on the biologic profile of spontaneously hypertensive rats stroke prone (SHRSP) rats, and its effects on blood pressure and the prevention of stroke. After a baseline period of 7 days, male SHRSP (n=24), were subdivided into 4 groups to investigate: curve-dose responses in animals receiving 12.5 µg/Kg, 25 µg/Kg or 50 µg/Kg of cholecalciferol for 28 days. After determination of an ideal dose, the plasma aldosterone was determined. Blood pressure was assessed with a tail-cuff plethysmography and other general biological parameters were monitored. We have demonstrated that ideal dose was 12.5 µg/Kg; this dose reduced the blood pressure, without provoking toxic effects. Plasma aldosterone and blood pressure decreased with 12.5 µg/Kg of cholecalciferol treatment from 19.7±12.1pg/mL to 10.7±4 pg/mL and from 212.2±3.3mmHg to 186.5±4.0mmHg, respectively. These findings confirm that cholecalciferol has a hypotensive effect, through plasma aldosterone modulation.*

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113-120 SHORT-TERM ATKINS DIET ALTERS BEHAVIOR AND GLYCEMIC STATUS OF HEALTHY HUMAN VOLUNTEERS

Ahmad Afaghi, Helen O'Connor and Chin Moi Chow

**ABSTRACT:** *The low carbohydrate, high-fat, high-protein Dr Atkins weight-reduction diet is popular worldwide. In addition to evidence of short-term efficacy for weight reduction, there are consistently reported side effects including constipation, halitosis, headache and fatigue. We examined the effect of the Atkins diet compared to a control mixed diet on sleepiness, mood, fatigue and related symptoms. Fourteen, healthy subjects (18-35 y, BMI= 23.2±1.9 kg.m<sup>-2</sup>) were maintained on a control diet followed by the Atkins diet for 48 h. Subjects' daytime mood, fatigue intensity and sleepiness on the Epworth Sleepiness Scale were assessed before the evening test meals. Symptoms that developed during the Atkins diet were scored using a modified Atkins diet symptom questionnaire. The number of subjects with dream recall was recorded on awakening after each polysomnographic night. Subjects developed ketosis and mild hypoglycemia 48 h after consuming the Atkins diet with significant increase in daytime symptoms of fatigue, sleepiness, depressed mood and impaired cognition. The findings indicate that macronutrients in food can significantly influence behavioral symptoms and dream recall in response to resultant biochemical changes. Thus mild hypoglycemia resulting from the diet may mediate the subjective responses of daytime sleepiness, depressed mood and intense fatigue.*

Current Topics in Nutraceutical Research 7 (3/4): 121-126

121-126      **LONG-TERM EFFECTIVENESS AND SAFETY OF A  
NUTRACEUTICAL BASED APPROACH TO REDUCE  
CHOLESTEROLEMIA IN STATIN INTOLERANT SUBJECTS WITH  
AND WITHOUT METABOLIC SYNDROME**  
A.F.G. Cicero, G. Derosa, M. Bove, F. Imola, C. Borghi and A.V.  
Gaddi

**ABSTRACTS:** *The aim of our study was to test the long-term effectiveness and tolerability of a nutraceutical based approach in reducing cholesterolemia in statin intolerant subjects with and without metabolic syndrome in primary prevention for cardiovascular disease. We carried out a prospective, clinical trial enrolling 48 subjects intolerant to more than one statin. Patients assumed one yogurt added with 2 g phytosterols each morning (Pro-Activ®, Unilever Italy, Milan, Italy) and one pills of a registered combined nutraceutical (Armolipid Plus®, Rottapharm-Madaus Srl, Monza, Italy) containing Berberine 500 mg and Monacoline 3 mg. Four patients dropped out from the study because of side effects (2 asymptomatic increase in CPK>5 ULN, 1 myalgia, 1 dyspepsia). After 3 months, total cholesterol decreased by 22.3±5.8%, LDL-C by 31.3±8.3%, TG by 16.11±10.7% (all, p<0.01): these reduction were confirmed each 3 month until 1-year. Fasting glycaemia decreased from the baseline only after 1-year of treatment by a 10.6±4.6% (p<0.05). Patient affected (N. 27) by metabolic syndrome also experienced a significant increase in HDL-C plasma level (p<0.01). In conclusion, a nutraceutical based approach could help the most part patients intolerant to more than one statin to achieve a moderate improvement of their dyslipidemia for at least one year.*

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**Current Topics in Nutraceutical Research 7 (3/4): 217-130**

127-130      **INGESTION OF ELASTIN PEPTIDES ALTERS MESSENGER RNA  
EXPRESSION IN MICE SKIN**  
Yurika Mizobe, Daichi Oikawa, Yoriko Akimoto, Shoichiro Tsuyama,  
Eiichiro Onitsuka, Mikako Sato, Yoshihisa Takahata, Fumiki  
Morimatsu and Mitsuhiro Furuse

**ABSTRACT:** *Elastic fibers in the dermis play an important role in the elasticity of the skin. The desmosine crosslinking structures produced by lysyl oxidase (LOX) in the elastic fibers are partly responsible for the elasticity. The degradation of elastic fibers by matrix metalloproteinases (MMPs), MMP-12, also plays an important role in the maintenance of elasticity. In the present study, we investigated whether the gene expression in skin for these enzymes can be modified by ingestion of elastin peptide. Mice were given elastin peptides orally by single administration. The mRNA expression of tropoelastin, LOX and MMP-12 in mice skin was then quantified by the real-time reverse transcriptase-polymerase chain reaction. Ingestion of elastin peptides caused an increase in tropoelastin and LOX, but not in MMP-12, mRNA expression. In conclusion, elastin peptides may be effective in prompting the synthesis of elastic fibers in mice.*

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**Current Topics in Nutraceutical Research 7 (3/4): 131-140**

131-140      **LONG-TERM ADMINISTRATION OF GREEN TEA CATECHINS INCREASES ANTIOXIDATIVE ACTIONS AND ENHANCES NEUROGENESIS IN THE HIPPOCAMPUS OF RATS**  
**Kohinoor B. Himi, Michio Hashimoto, Masanori Katakura, Abdul M. Haque, Yukihiro Hara and Osamu Shido**

**ABSTRACT:** *We reported that green tea catechins prevent oxidative stress and improve spatial cognition learning ability in rats. To understand the mechanisms, we investigated the effects of green tea catechins on mRNA expression and activity of antioxidative enzymes and the effect on hippocampal neurogenesis in rat brain. Green tea catechins [Polyphenon E (PE): 63% (-)-epigallocatechin gallate, 11% (-)-epicatechins, 6% (-)-epigallocatechin and 6% (-)-epicatechin gallate] were administered to male Wistar rats. After 26 weeks of PE administration rat brains were isolated and measured the mRNA levels and activity of antioxidative enzymes. To investigate the effect of PE on neurogenesis, 5-bromo-2'-deoxy uridine (BrdU) was injected for 5 consecutive days and stained for BrdU positive cells. PE administration increased the enzyme activity and mRNA levels of catalase, glutathione peroxidase, glutathione reductase and superoxide dismutase in the cerebral cortex and/or hippocampus compared to controls. PE administration also increased number of BrdU-Neuronal nuclei double positive cells in the dentate gyrus of hippocampus than controls. These results indicate that long-term administration of green tea catechins increases antioxidative action and neurogenesis in brain. This is possibly related to the mechanisms involved in improving cognitive function of green tea catechins-administered rats.*

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**Current Topics in Nutraceutical Research 7 (3/4): 141-148**

141-148      **FOOD DEXTRIN PROTECTS AGAINST COLONIC INFLAMMATION AND PREVENTS COGNITIVE IMPAIRMENTS**  
**Pascale Rozan, Laetitia Deremaux, Daniel Wils, Sophie Hidalgo, Jean-François Bisson, Michaël Messaoudi, and Marie-Hélène Saniez**

**ABSTRACT:** *The aim of the present study was to investigate the protective effects of the dextrin NUTRIOSE®6 (Dex) on colonic inflammation. Five percent of Dex or Glucose (Glu) diets were administered for 2 weeks to Wistar male rats prior to colitis induction with 1mg of TNBS (2,4,6-Trinitrobenzenesulfonic acid) or 20% ethanol (vehicle). An aversive light stimulus avoidance test (ALSAT) was performed to assess the cognitive performances of rats that are correlated to pain. Growth, food intake and biological parameters as caecal wall thickness, enzyme activities, short chain fatty acid content were investigated. Macro and microscopic scores of colonic inflammation of each treatment groups were compared. The results suggest that Dex prevents colonic inflammation induced by ethanol and TNBS administrations and have positive consequences on cognitive impairments.*

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**Current Topics in Nutraceutical Research 7 (3/4): 149-156**

149-156      **MEAL PATTERN OF MALE RATS MAINTAINED ON INDIVIDUAL BRANCHED CHAIN AMINO ACID SUPPLEMENTED DIET**

Nabiha G. Ramadan, Melanie A. Mattar and Omar A. Obeid

**ABSTRACT:** *The effect of branched chain amino acids (BCAAs: Isoleucine, Leucine and Valine) on feeding behaviour is not clear, especially that they were implicated in the management of both cachexia and obesity. An experiment was conducted to investigate the effect of individual BCAAs on meal pattern of rats. Adult male rats were randomly divided into four groups: control diet or isoleucine (5%)- leucine (5%)- or valine (5%)-supplemented diet and meal pattern was monitored for 10 days. Total food intake (nocturnal and diurnal), feeding rate, postprandial plasma insulin and hepatic adenine nucleotides were not significantly different between the groups. However, individual BCAAs were found to alter meal pattern of rats, whereby meal size was increased while meal number was decreased; with valine having the most pronounced effect. The mechanism(s) by which individual BCAAs affect meal pattern may relate to their capacity to compete with tryptophan and phenylalanine-tyrosine for entry into the brain.*

#### CURRENT TOPICS IN NUTRACEUTICAL RESEARCH VOLUME 7 NUMBER 3/4

Current Topics in Nutraceutical Research 7 (3/4): 157-160

157-160      **GLYCEMIC INDEX AND GLYCEMIC LOADS OF VARIETY OF FRUITS: CLINICAL IMPLEMENTATION OF FRUITS' SERVING SIZE IN LOW GLYCEMIC LOAD DIET**  
Ahmad Afaghi, Amir Ziaee, Shahyar Mesbah Kiaee and Nima Hosseini

**ABSTRACT:** *Consuming fruits and vegetables as low glycemic index (GI) foods are recommended in the weight loss and also diabetic management. Recognition of GI of fruits in different regions enables us to develop and cultivate low GI fruits. To determine the GI of variety of fruits which are exportable in Iran, groups of 8 healthy nondiabetics male volunteers aged 20-28 within School of Medicine, randomly assigned to each of fruits including: apricots, prunes, cherries, blueberries, Golab apples, Green apples, Golden no-seed grapes and Red sultanas. GIs were calculated as the ratios of the incremental areas under these response curves to those for glucose ingestion. GIs of fruits were compared using repeated measure ANOVA and a test of within-subjects contrast to compare the mean GI of certain tested fruits. Mean GI of variety of fruits were  $39 \pm 5$ ,  $41 \pm 6$ ,  $50 \pm 6$ ,  $34 \pm 7$ ,  $29 \pm 4$ ,  $28 \pm 6$ ,  $48 \pm 6$ ,  $49 \pm 7$  respectively for Golab apple, Green apple, apricots, prunes, cherries, blueberries, Golden no-seed grapes and Red sultanas. The GIs were significantly different between the 8 tested fruits ( $P > 0.002$  for overall effect). Serving size of blueberries, cherries, Golab apples, Green apples, prunes, and apricots were low glycemic load (GL) fruits while golden no-seed grapes considered medium (GL= 13) and Red sultans with GL = 23 had the highest GL among tested fruits. All tested fruits were low GIs. The tested fruits can be recommended for diabetics and weight loss management. Consumption of one serving size sultanas will have high GL and is not suitable for diabetics.*