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1-8 EFFECT OF BETA-CAROTENE ENRICHED CARROT JUICE ON INFLAMMATORY STATUS AND FASTING BLOOD GLUCOSE IN TYPE 2 DIABETIC PATIENTS

Atena Ramezani, Abbas Yousefinejad, Mohammad H. Javanbakht, Hoda Derakhshanian and Farideh Tahbaz

ABSTRACT: ***The present research was designed to study the effects of beta-carotene enriched carrot juice on the level of inflammatory indicators and fasting blood glucose in type 2 diabetic patients. A double-blind randomized clinical trial was carried out on 44 patients with type 2 diabetes. Patients were classified into two groups based on their sex and BMI, receiving 200 ml of carrot juice fortified with 10 mg betacarotene (Group A) and normal carrot juice (Group B). Both groups received 200 ml carrot juice daily for eight weeks. Serum C-reactive protein, interleukin-6 and betacarotene and fasting blood glucose were assessed. Serum beta-carotene in group A increased significantly, compared to group B (p = 0.01). However, neither the reduction rate of CRP nor the reduction of serum IL-6 in group A was statistically significant, compared to those in group B (-0.8±2.1 and -0.6 ±2.4, respectively; p = 0.085). Furthermore, no change in fasting blood glucose was seen. In conclusion, daily consumption of 200 ml of carrot juice fortified with 10 mg of beta-carotene for eight weeks improved serum beta-carotene levels in type 2 diabetic patients, with no significant effects on the serum level of glucose and inflammatory indicators.***

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9-12 ANTIOXIDANT ACTIVITY OF A CRUDE PREPARATION RICH IN PHENOLIC COMPOUNDS FROM THE OLIVE STONES OF TWO MOROCCAN CULTIVARS, A PRELIMINARY STUDY

Mustapha Elbir, Abdellatif Amhoud, Mohamed Mbarki, and Francesco Visioli

ABSTRACT: ***Olives and olive oil are rich in phenolic compounds whose biological activities are being uncovered. Yet, very few studies have focused upon the phenolic composition of olive pits (aka seeds, stones). Because there is a need to provide added value to by-products such as olive pits and to build the bases for their potential exploitation, we assessed the antioxidant activities of extracts from two Moroccan varieties, i.e. Picholine and Haouzia. Mature olive fruits from the Moroccan Picholine cultivar that grows in the province of Beni Mellal of Middle Atlas and from the Haouzia area called Marrakech-Tensift-Al Haouz, in Morocco, were picked during the 2009 and 2010 harvesting seasons and polyphenols were extracted from the pits with ethanol and acetone. We then performed three different in vitro tests of antioxidant activity that showed how the radical scavenging and antioxidant activity of the Picholine extract is comparable with that of pure oleuropein and of vitamin C. In summary, olive pits from the Moroccan Picholine variety appear to be an interesting by-product that might provide useful as sources of phenolic antioxidants, to be potentially exploited in the food or cosmetic sectors.***

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13-18 INHIBITION OF CYCLOOXYGENASE AND 5-LIPOOXYGENASE ENZYMES BY D-002 (BEESWAX ALCOHOLS)

Yohani Pérez, Ámbar Oyarzábal, Yazmín Ravelo, Rosa Mas, Sonia Jiménez and Vivian Molina

ABSTRACT: ***D-002, a mixture of six higher aliphatic beeswax alcohols, has been shown to produce anti-inflammatory effects in experimental models and to exhibit gastroprotective, not gastrotoxic effects. The mechanism of the anti-inflammatory action of D-002, however, had not been explored yet. This study was aimed at investigating the effects of D-002 on cyclooxygenase (COX) and 5-lipoxygenase (5-LOX) activities in vitro. The addition of D-002 to preparations of the cytosolic fraction of rat blood polymorphonuclear leukocytes significantly ($p<0.001$) and dose-dependently ($r=0.990$) inhibited the in vitro activity of 5-LOX up to 81% at 500µg/mL concentration. In contrast, nordihydroguaiaretic acid (NDGA), the reference substance, inhibited 5-LOX activity by 55%. Also, D-002 produced a significant ($p< 0.001$) and dose-dependent ($r=0.984$) inhibition of COX activity in preparations of rat liver microsomes up to 61% at 2500 µg/ml, while indomethacin at 0.4 mg/ml produced a 90% inhibition. D-002 modified both kinetic parameters (Vmax and Km) of 5-LOX and COX activities through uncompetitive mode of inhibition. This study demonstrates that D-002 inhibits both COX and 5-LOX activities, with a highest affinity for 5-LOX, so that the dual inhibition of both enzyme activities may explain the observed anti-inflammatory effects of D-002 as well as the lack of D-002-related gastrotoxicity.***

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19-24 SUPPLEMENTATION OF ALPHA-TOCOPHEROL IS ABLE TO MODULATE HEART AND KIDNEY HISTOPATHOLOGICAL FEATURES OF SHRSP RATS

Marcela R. M. Guimarães, Leonardo B. Murad, Aline Paganelli, Carlos Alberto Basílio de Oliveira and Lucia M. A. Vianna

ABSTRACT: ***We investigate whether alpha-tocopherol treatment is able to modulate the affected heart and kidney structures of severely hypertensive animals. SHRSP rats subdivided into two groups receiving either 120IU of alphatocopherol acetate or control. Systolic blood pressure was measure twice a week. Afterwards, the rats were sacrificed and the tissues were analyzed by histopathology. Oxidative stress was performed by measuring the levels of plasma malondialdehyde. There was a significant hypotensive effect (221.04 ± 2.04 mmHg to 213.03 ± 0.05 mmHg, $p<0.05$) and sharp decrease of malondialdehyde levels (4.55 ±0.12 nmol/dl vs. 2.73 ± 0.21 nmol/dl, $p<0.05$) in animals treated with alpha-tocopherol compared to controls. According to the heart histopathology, the average number of muscle fibers in the treated group was lower than control group (41.2 ± 4.08 cells vs. 56.8 ± 3.63 cells, $p<0.05$). Regarding renal histopathology it was observed that there was a significant decrease of hyalinization of the glomeruli and renal vessel in the treated group vs. control group (34.9 ± 4.92 vs. 221.05 ± 7.44, $p<0.05$) and (24.25±4.87 vs. 504.63±9.84, $p<0.05$). This study suggests that alpha-tocopherol may arouse interest in the treatment of vascular diseases.***

Current Topics in Nutraceutical Research 12 (1/2): 25-34

25-34 HERBS POTENTIALLY ENHANCING SPORTS PERFORMANCE

H.U. Yavuz and D. Özkum

ABSTRACT: ***Herbs have a long history of use as traditional medicines to enhance athletic performance. The following herbs are currently used to enhance athletic performance, mostly regardless of scientific evidence of effect: Ginsengs, ephedra, guarana, Tribulus terrestris, kava, St. John's wort, yhombine and ginkgo. Controlled studies for the potential ergogenic effects of herbs are limited and the results are controversial. Future research on ergogenic effects of herbs should consider identity and amount of substance or presumed active ingredients administered, dose, and duration of test period, proper experimental protocols, and measurement of psychological and physiological parameters and measurements of performance pertinent to intended uses. This review focuses mainly on most common herbs that are used to enhance athletic performance at present.***

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35-42 INHIBITION OF INDUCIBLE NITRIC OXIDE SYNTHASE AND CYCLOOXYGENASE-2 BY METHANOLIC EXTRACT OF CRATAEGI FRUCTUS

Jin Uk Oh, Haejin Jang and Sung-Jin Kim

ABSTRACT: ***Crataegi Fructus has a wide variety of pharmacological actions such as improving digestion, cardiotonic action, and hypolipodemic effect. In the present study, we sought to test whether the Crataegi Fructus extract has antioxidant activities. Anti-oxidative actions were explored by measuring free radical scavenging activity, nitric oxide (NO) levels, and reducing power. The mechanism of anti-oxidative action of Crataegi Fructus was explored by measuring inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) induction in lipopolysaccharide (LPS) stimulated RAW 264.7 cells. Seventy percent methanolic extract of Crataegi Fructus exerted significant 1,1diphenyl-2-picrylhydrazyl (DPPH) free radicals and NO scavenging activities. More strikingly, the Crataegi Fructus extract exerted dramatic reducing power activity. Expression of iNOS induced by LPS was significantly inhibited by the Crataegi Fructus extract, suggesting that it inhibits NO production by suppressing iNOS expression. Moreover, COX-2 induced by LPS was also markedly inhibited by the Crataegi Fructus extract. These results suggest that 70% methanolic extract of Crataegi Fructus exerts significant antioxidant and anti-inflammatory activities, possibly via inhibiting iNOS and COX-2 induction.***

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43-50 LIVER FIBROSIS PROTECTIVE EFFECT OF *HOVENIA DULCIS* FRUIT

J. J. Lee, S. Y. Yang, D. H. Kim, S. J. Hur, J. D. Lee, M. J. Yum and M. D. Song

ABSTRACT: ***This study was conducted to investigate the effects of the fruit extract from Hovenia dulcis (HD) on liver fibrosis in rats. In these experiments, liver fibrosis was induced by carbon tetrachloride (CCl4) treatment. Forty rats were randomly divided into four groups: Normal group (corn oil subcutaneous injection), CCl4 group (CCl4-induced liver fibrosis group; 50% CCl4, 1.0 mL/kg), Normal + HD group (20% HD, 4.0 mL/kg), CCl4 + HD group (20% HD, 4.0 mL/kg). To study the effect of extracts from HD fruit on the liver fibrosis in rats, which was induced by CCl4, enzyme activities such as Alanine aminotranferase (ALT) and Aspartate aminotransferase (AST) were measured in the serum. Bilirubin concentration in the serum and expression of collagen I and III in liver tissue were also analyzed. In addition the pathology of the liver tissue was evaluated. Tetrazoliumbased colorimetric (MTT) and Sulforhodamin B (SRB) were used to analyze the effect of treatment on hepatic stellate cell (HSC) proliferation. In the present study, the ALT, AST and Bilirubin levels and expression volume of collagen I and III in the CCl4 + HD group were found to be lower than in the CCl4 group. In addition, HD treatment reduced the accumulation of collagen in liver tissue and inhibited HSC proliferation. These results indicated that the extracts from HD fruit may inhibit liver fibrosis and thus could be used as a therapeutic agent to prevent liver fibrosis.***

Current Topics in Nutraceutical Research 12 (1/2): 51-56

51-56 DIETARY SUPPLEMENTS AND INSOMNIA

Xu Yan-Rong, Li Ming-Xiang and Gao Jin-Gui

ABSTRACT*: Anesthesia and sleep both inhibit people's awaking consciousness and cause a temporary loss of consciousness in the external environment. Anesthesia may play a role by activating neural networks associated with sleep regulation. Also, sleep-related cerebral nuclei play an important role in the occurrence and maintenance of anesthesia. Through the mutual crisscross physiological processes of anesthesia and sleep, this paper provides a new direction for understanding the occurrence and adjustment of sleep. Regulating sleep with practical dietary supplements provides the possibility for the patients with chronic insomnia to receive clinical anesthesia treatment.*

Current Topics in Nutraceutical Research 12 (1/2): 57-64

57-64 EGb 761 SUPPLEMENTATION INCREASES MANGANESE CONTENT IN MOUSE BRAIN IN AN ANIMAL MODEL OF PARKINSON'S DISEASE

Carolina Rojas, Sergio Montes and Patricia Rojas

ABSTRACT*: EGb761 is a patented and well-defined mixture of active compounds extracted from Ginkgo biloba leaves with neuroprotective effects, in part via its antioxidant or free radical scavenger action. It has neuroprotective effects in an animal model of Parkinson's disease induced by 1-methyl-4-phenylpyridinium (MPP+). Because manganese plays an important role in brain function and its reduction has been reported in Parkinson's disease, we investigated whether EGb761's protective effect in MPP+ neurotoxicity is related to the regulation of manganese in the brain. C-57BL/6J mice were pretreated with EGb761 (10 mg/kg) daily for 17 days followed by administration of MPP+ (0.72 mg/kg); the mice were sacrificed 24 h later. The manganese content of striatum, hypothalamus, midbrain, hippocampus, prefrontal cortex, and cerebellum was analyzed by graphite furnace atomic absorption spectrophotometry. Manganese content was significantly reduced in midbrain (12%), hypothalamus (20%) and cerebellum (19%) after MPP+ administration. EGb761 pretreatment to the MPP+ group prevented reduction in the manganese content of midbrain. No significant changes were found in the manganese content of the striatum, hypothalamus, cerebellum, hippocampus and prefrontal cortex in the "EGb761 + MPP+" group compared to the "saline + MPP+" group. The neuroprotective effect of EGb761 against MPP+ neurotoxicity may be due, in part, to the regulation of manganese homeostasis in the brain.*

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