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Current Topics in Nutraceutical Research 11 (1/2): 1-8

1-8 LAXATIVE EFFECT OF FRUCTOOLIGOSACCHARIDE IN MICE AND HUMANS

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ABSTRACT: ***Constipation is a prevalent, symptom-based disorder. There is evidence supporting the fact that the intake of prebiotics can affect bowel habit and is mildly laxative. Fructooligosaccharides (FOS) are referred to as prebiotics because they are capable of selectively stimulating the growth of beneficial bacteria such as bifidobacteria and enhancing their survival in vivo. Thus, the present study tests the laxative effect of FOS on the constipated mice and constipated adults. In the animal experiment, 100 Kun-Ming mice were randomized into 10 groups with 10 in each, among which 5 groups (control group, constipation group, and low, medium, high dose of FOS groups) were for small intestine movement experiment, the other 5 groups (the same as above) were for defecating experiment. The animals were treated with different doses of FOS (0.4, 0.8, and 2.5 g/kg bw) for 10 days, and then subjected to the small intestine movement experiment (reflected by ink propellant rate) and defecating experiment (reflected by the time of the first black feces excretion and the number and the weight of mice feces within 5 hrs). In the human study, a total of 100 constipated adults were enrolled on the basis of inclusion and excluded criteria in a randomized, double-blind study with the consumption of 5 g/d FOS for 10 days. The stool frequency, stool shape, straining effort and evacuation were used to define the efficacy of FOS. In the animal study, compared to constipation group, FOS effectively boosted the ink propellant rate, shortened the time of the first black feces excretion, and increased the number, fecal weight and the level of SCFA in the mice. In the human study, FOS significantly increased the bowel evacuation rate, reduced perception of straining effort and pain, and improved the quality of stools. These data indicate that FOS effectively enhanced the bowel movement and showed a significant improvement in the parameters related with bowel evacuation, and thus FOS could serve as a useful and safe tool for ameliorating constipation.***

Current Topics in Nutraceutical Research 11 (1/2): 9-14

9-14 *IN VITRO* ANTICANCER STUDIES ON CANTRON® AND ITS CONSTITUENTS

Fred Valeriote, Joseph Media, Matthew Edelstein and Russell Betts

ABSTRACT: ***The anticancer activity of Cantron® and its presumed constituents were examined in vitro against a number of leukemia, solid tumor and normal cell types in a disk diffusion assay. It was demonstrated to have solid tumor selectivity against murine Colon38 compared to both murine leukemia L1210 and murine bone marrow stem cells (CFU-GM). The cytotoxic compounds in Cantron® with significant anticancer activity in vitro were shown to be catechol and tetrahydroxyquinone (THQ). IC_{50} values were determined against 13 different cancer cell lines and yielded an average value of 22.8 µg/mL for Cantron®, 2.3 µg/mL for catechol and 23.7 µg/mL for THQ. Clonogenic studies for these three materials demonstrated a similar increase in cell killing as a function of exposure time (from 2 h to 7 days) with the 7 day S_{10} value (concentration with yielded a 10% survival of clonogenic cells) of 5, 1.6 and 5 µg/mL, respectively, for Cantron®, catechol and THQ. An HPLC assay for catechol demonstrated its percentage in Cantron® at 12.7% by weight, a value also deduced from the cytotoxic activities of the components of Cantron®. These studies indicate that Cantron® has both anticancer activity and therapeutic potential.***

Current Topics in Nutraceutical Research 11 (1/2): 15-20

15-20 EFFECTS OF CONJUGATED LINOLEIC ACID SUPPLEMENTATION ON NUTRITIONAL STATUS, SYMPTOMS OF EATING PROBLEMS AND DIETARY INTAKE IN RECTAL CANCER PATIENTS UNDERGOING CHEMORADIOTHERAPY

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ABSTRACT*: The aims of this study were to determine the effect of conjugated linoleic acid (CLA) supplementation on nutritional status, symptoms of eating problems and dietary intake in rectal cancer patients undergoing chemoradiotherapy. In this randomized clinical trial, 33 volunteer patients with rectal cancer who were referred to the radiotherapy center were recruited. Patients were assigned into CLA group (n=16), receiving 3 g CLA/d and placebo group (n=17) receiving placebo capsules (sunflower oil) for 6 weeks. Before and after intervention, nutritional status, weight, symptoms of eating problems and dietary intake of patients were assessed by Patients Generated Subjective Global Assessment, Seca scale, questionnaire and 24-hour food recall method, respectively. At the end of intervention, 2 patients were excluded from the study. In the CLA group, incidence of malnutrition decreased significantly as compared with the placebo group (P=0.033). In comparison with placebo group, CLA supplementation resulted in significant (P<0.05) reduction in incidence of appetite loss, nausea, diarrhea, pain and significant increase in dietary intake (P<0.05). At the end of study, the mean body weight of patients decreased significantly in both groups (P<0.05). According to our results, it seems that CLA may provide new complementary treatment by improving malnutrition, eating problems and dietary intake. However, further studies with large sample size are needed to confirm our results.*

Current Topics in Nutraceutical Research 11 (1/2): 21-28

21-28 EVALUATION OF A PHYTO-SUPPLEMENT EFFICACY AS ADJUVANT IN REDUCING BODY WEIGHT AND FAT MASS IN OVERWEIGHT WOMEN

Enrico Doria, D. Buonocore, A. Michelotti, V. Nobile and F. Marzatico

ABSTRACT: *Overweight and obesity affect more than 66% of the adult population and are associated with a variety of chronic diseases. Weight loss has then beneficial effects in reducing health risks associated with chronic diseases. In recent decades, weight management has evolved into a multi-disciplinary approach, combining low-calorie diets with physical activity and nutritional supplementation. This could help weight loss by inducing a reduction in caloric intake, an increased lipolysis or a reduction of the nervous system feedback of hunger sensation. The study presented in this work aimed at evaluating the efficacy of a dietary supplemental containing phloridzin, isoflavones and probiotics (Re-Code®), as an adjuvant in reducing body weight and fat mass in slightly overweight women. Phyto-supplement consumption was included in a body weight reduction programme including a mild hypocaloric diet and moderate daily physical activity. A randomised, double-blinded, placebo-controlled trial was conducted on 40 slightly overweight women aged 30 to 54. Women taking the phyto-supplement showed greater reductions in body weight, fat mass and waist, thigh and buttock circumference than the control group. Moreover, the used phyto-supplement proved to be an effective adjuvant in body weight and fat mass reduction when associated with both a mild low-calorie diet and moderate physical activity in overweight women.*

Current Topics in Nutraceutical Research 11 (1/2): 29-34

29-34 PROTECTIVE ROLE OF THE POLYSACCHARIDES FROM SEA CUCUMBER, *ACAUDINA MOLPADIOIDEA*, IN CECAL LIGATION AND PUNCTURE-INDUCED SEPSIS

Yong-Jiang Lou, Gang Huang, Yi-Lin Zhao, Xin-Jiang Lu and Jiong Chen

ABSTRACT: *Sea cucumber, possessing various active compounds, is a traditional food in Asia. Acaudina molpadioidea is a kind of sea cucumber widespread in Eastern Asia. Sepsis is the systemic*

inflammatory response to infection predominantly from gram-negative bacteria. Here, we investigated the effect of active compounds of sea cucumber (A. molpadioidea) on the sepsis. Our results found the polysaccharides, but not polypeptides, from sea cucumber improved the survival in CLP induced septic mice. After polysaccharides oral administration, the colony-forming units (CFU) were all decreased in liver, spleen, and blood samples of septic mice compared with controls. The pro-inflammatory factors, IL-1β and TNFα, were both down regulated in the plasma of polysaccharides fed mice. There were similar plasma levels of IL-10 in polysaccharides and saline fed mice. The peritoneal macrophages from polysaccharides fed mice exhibited stronger phagocytosis and bacterial killing capabilities than controls. This study provides a kind of new potential food to possibly improve sepsis-related mortality in human.

Current Topics in Nutraceutical Research 11 (1/2): 35-40

35-40 GLYCEMIC INDEX OF SUCROSE WITH D-XYLOSE (XF) IN HUMANS

Kyungsun Lee, Sunghyun Moon, Sangwon Jung, Yunje Park, Sewang Yoon, Keunbum Choe and Changkun Yang

ABSTRACT: *The aim of this study was to evaluate sucrase inhibition by D-xylose in humans. Sucrose was administered with D-xylose to 13 healthy volunteers (5 males and 8 females), and their blood glucose levels were examined. The mean ± standard error glycemic indices (GIs) of sucrose with 5% D-xylose (XF) and sucrose alone were 59.6 ± 4.0 and 77.6 ± 3.1, respectively. The mean glycemic index of sucrose with 5% D-xylose (XF) was 23% lower than that of sucrose alone. The mean glycemic index of sucrose with 5% D-xylose (XF) in obese individuals was significantly lower than that of sucrose with 5% D-xylose (XF) in normal-weight individuals. The glycemic index of sucrose with 5% D-xylose (XF) was reduced approximately 40% when compared with sucrose alone in obese individuals. However, the reduction in the glycemic index by D-xylose was relatively less in normal-weight individuals than in obese individuals. Additionally, there was a negative correlation between the glycemic index of sucrose with 5% D-xylose (XF) and body-fat percentage. Therefore, sucrose administered with an appropriate amount of D-xylose can contribute to the reduction of problems caused by excess sucrose consumption.*

Current Topics in Nutraceutical Research 11 (1/2): 41-46

41-46 BERBERINE INDUCED IMPROVEMENT IN HEPATIC STEATOSIS INDEX IN OVERWEIGHT DYSLIPIDAEMIC PATIENTS TREATED WITH LIPID- LOWERING NUTRACEUTICALS

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ABSTRACT: *Liver steatosis is a common feature of overweight dyslipidaemic patients, suggested by some recent literature to increase the risk cardiovascular disease. Preliminary data suggest that berberine can improve liver steatosis. The aim of our study was to evaluate the effect of berberine in dyslipidaemic patients treated with a standardized lipid-lowering nutraceutical with or without berberine. 39 subjects (19 M, 20 W) affected by mixed dyslipidemia (LDL-C>130 mg/dL and TG>200 mg/dL) and liver steatosis were randomized to be treated with a Monascus purpureus (3 mg monakoline) lipid-lowering nutraceutical or with Monascus purpureus plus berberine (Armolipid Plus®) for 8 weeks. The effect on liver was evaluated monitoring Hepatic Steatosis Index [8 x (GPT/GOT ratio) + BMI (+2 if women; + 2 if DM). All patients tolerated the treatment. No increase in transaminases was observed. Both treatments experienced a significant improvement of LDL-C cholesterolemia (-22%), whereas only berberine-monascus lowered significantly TG (-25%). Considering HSI, it did not change in monascus treated patients (T0= 36.2±2.0 vs T8= 35.5±1.4 p>0.05), while it significantly improved in the berberine-monascus treated ones (T0=*

36.5±1.8 vs T8= 35.3±1.3, t= 4.750, p<0.001). A short term treatment with berberine-monascus was associated to a significant improvement in HIS in mixed dyslipidemia patients.

Current Topics in Nutraceutical Research 11 (1/2): 47-54

47-54 INTRACEREBROVENTRICULAR INJECTION OF PYRITHIAMINE ON SHORT-TERM MEMORY AND HABITUATION LEARNING IN MICE

Satoshi Yamada, Shozo Tomonaga, D. Michael Denbow and Mitsuhiro Furuse

ABSTRACT: ***Generally, experimental thiamine deficiency (TD) models involve feeding a thiamine deficient diet and giving intraperitoneal injections of the thiamine antagonist pyrithiamine (PT). While this method causes TD-like Wernicke-Korsakoff syndrome for 10-14 days, behavioral tests show that effects of these models include peripheral organic changes induced by systemic TD or chronic stress induced by housing conditions. In order to isolate the effects of TD due to alterations in the central nervous system, the effect of intracerebroventricular (i.c.v.) injection of PT on behavioral changes and monoamine and amino acid metabolism was investigated. In Experiment 1, short-term memory was not affected in the Y-maze test, but locomotor activity was decreased by PT. In the temporal lobe, monoamine metabolites were increased by PT. In Experiment 2, the effect of i.c.v. injection of PT on habituation learning behavior was investigated. The moving distance in the open field was significantly reduced in the control group, but not in the PT group. Monoamine metabolism was not changed by PT in the cerebral cortex, pons or hypothalamus, but norepinephrine and dopamine metabolites were significantly decreased in the hippocampus. In addition, PT caused a decreased in serotonin metabolites in the striatum and thalamus. These results suggest that alterations in central nervous system monoamine metabolism may be induced during the early stage of TD. These changes may be a pathological sign of thiamine deficiency.***

Current Topics in Nutraceutical Research 11 (1/2): 55-62

55-62 L-GLUTAMINE SUPPLEMENTATION: EFFECTS ON ENDURANCE, POWER AND RECOVERY

Tavis Piattoly, Tracie R. Parish and Michael A. Welsch

ABSTRACT: ***The purpose was to examine the influence of L-Glutamine on endurance and power. Cardio-respiratory capacity (VO_{2peak}) was determined in 12 men using a cycle ergometer. After 2 days, subjects performed 3 Wingate tests to assess total revolutions (TR), peak (PP) and mean Power (MP); and a time trial to exhaustion (TTE). Two Wingates were conducted before and immediately after the TTE, the third after 24hrs. Subjects were then randomized to either L-glutamine (GLU) or placebo (CON) for 6 days. After 6 days all tests, except the VO_{2peak}, were repeated. There were no group differences for VO_{2peak}, power indices, and TTE before supplementation. Both groups showed a similar drop in power (TR:-22%; PP:-27%; MP:-27%, p<0.001) immediately after the TTE, with incomplete recovery at 24hrs. After 6 days, GLU improved TTE by 3.16±0.75min (p<0.05) compared to no change in CON. Delta values (Post-Pre supplementation) revealed group differences for TR (GLU: Δ1.83±4.79; CON: Δ-5.33±4.13; p=0.02), PP (GLU: Δ-58.59±50.52; CON:-Δ113.67±63.35, p=0.12), and MP (GLU: Δ28.93±75.02; CON: Δ-72.25±62.14, p=0.02). No effects were noted immediately and 24hrs after the TTE. These findings suggest 6 days of glutamine supplementation does not affect acute recovery from exhaustive exercise; but does increase endurance and restores and/or improves power indices.***