

CURRENT TOPICS IN NUTRACEUTICAL RESEARCH

Volume 8

Number 2/3

August 2010

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59-64 EFFECT OF A COMBINATION OF GRAPE SEED EXTRACT, CAPSAICIN, GENISTEIN, AND CAFFEINE ON BODY WEIGHT IN OBESE ZUCKER RATS

Parakat Vijayagopal, Julio E. Figueroa and Chandan Prasad

ABSTRACT: *The incidence of obesity is increasing rapidly worldwide. Identification of compounds that may decrease fat cell burden will be beneficial in the control of obesity. In the present study we investigated the effect of a combination of grape seed extract, caffeine, genistein, and capsaicin (GCGC) in reducing body weight in obese male zucker rats. Rats were pair-fed on a high fat diet or high fat diet + GCGC for 5-weeks. GCGC caused a significant weight loss due to the depletion of fat depots. GCGC also improved insulin response, reduced plasma glucose and free fatty acids, and increased plasma adiponectin. Adipocytes from rats fed GCGC were more responsive to the various stimulators of lipolysis than the control adipocytes. These results show that a combination of plant-derived products is very effective in reducing body weight and improving insulin sensitivity and glucose response in obese zucker rats. This may have implications in the treatment of overweight and obesity in humans.*

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65-68 DIET AND BRAIN TUMOR: AN EPIDEMIOLOGICAL STUDY

Vahid Afaghi, Ahmad Afaghi and Afsoun Seddighi

ABSTRACT: *Diet containing N-nitroso compound has been introduced as an environmental factor in the etiology of brain tumor with incidence of 6-8 per 100000 in USA. Previous studies have not compared the incidence rate of brain tumor in two regions having different dietary pattern. To address this gap, a study designed to find out the incidence of brain tumor in Qazvin city (Iran), which has different dietary pattern from western society. Using newly diagnosed brain tumor, the incidence rate of brain tumor determined during years 2007-8 and dietary pattern of region extracted from previous conducted studies. This study revealed that, although there was different dietary pattern in urban and rural area of study, but the brain tumor incidence was 4 per 100000 in both regions. Also, the dietary pattern in the region was different from western societies, but the brain tumor incidence rate was comparable with those of USA. We suggest that there might be other environmental factor affecting etiology of brain tumor too.*

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69-78 PRENATAL EXPOSURE TO EQUOL DECREASES BODY WEIGHT AND DEPRESSIVE-LIKE BEHAVIORS IN MALE AND FEMALE OFFSPRING

Crystal Blake, Kim M. Fabick, Kenneth D.R. Setchell, Trent D. Lund, Edwin D. Lephart

ABSTRACT: *A critical period in rat reproductive development occurs during gestational days 12-21. During this interval hormonal factors can alter reproductive development and postnatal behavioral expression in rats. Pregnant rats were injected with one of five treatments. At birth pups were examined for external morphological differences between sexes. Behavioral analysis [Porsolt Forced Swim test (PFST)] was performed on postnatal day 29. Prenatal equol exposure at high (10.5 mg/kg) or supra-pharmacological (63.0 mg/kg) doses during late gestation: a) significantly decreased body weight in the mothers and newborns, b) did not alter genital development or DHT levels in either the male or female offspring and c) significantly decreased depressive-like behaviors in the PFST. These results suggest that exposure to high or supra-pharmacological doses during late gestation do not negatively affect pup growth, reproductive development, or depressive-related behavior in the rat model. Notably, depressive-like behaviors in the offspring were significantly decreased compared to controls.*

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79-88 **ASSESSING THE EFFICACY OF NUTRACEUTICAL INTERVENTIONS ON COGNITIVE FUNCTIONING IN THE ELDERLY**

Andrew Pipingas, Elizabeth Harris, Elesha Tournier, Rebecca King, Marni Kras and Con K. Stough

ABSTRACT: *With many nutraceutical interventions designed to slow cognitive aging, there is a need for computerised tests that can detect small cognitive changes that may occur in response to these interventions. A battery of 13 computerised cognitive tasks was developed to capture the range of cognitive functions that decline with age. One hundred and twenty adults aged 21 to 86 years, with a MMSE score ≥ 27 completed the test battery. Accuracy and response time were measured. Regression analysis revealed age-related decrements in cognitive performance for all tasks. Performance accuracy for the Spatial Working Memory task and speed of response for Spatial Working Memory, Contextual Memory and Immediate Recognition tasks showed the greatest age-related decline. The tasks showed good test-retest reliability and correlated with other commonly used neuropsychological tests in aging research. With the sensitivity of this cognitive test battery to aging, it may be useful in future studies investigating cognitive improvements in response to nutraceutical interventions in older adults.*

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89-94 **ANTIOXIDANT ACTIVITY OF PARENT ‘JUICE GRAPE’ VARIETIES AND THEIR HYBRIDS**

S.S. Gite, V. V. Agte, S. P. Karkamkar and S.S. Nilegaonkar

ABSTRACT: *Grape varieties differ markedly in the range of phenolic compounds and antioxidant activity showing health promoting activities like cardio protective, hepatoprotective, neuroprotective, anticarcinogenic, anti-inflammatory actions. Considering the huge biodiversity of grape varieties and their immense functional attributes, Agharkar Research Institute has developed few hybrid varieties suitable for Indian conditions being drought resistant, disease resistant and having pleasant color and taste. This study was undertaken to investigate the antioxidant activity of 14*

hybrid grape varieties (designated as V5-V18) with respect to four established American 'juice grape' varieties cultivated in India (V1- vitis labrusca, V2-vitis labrusca, V3- Vitis champini and V4- vitis labrusca). Trolox equivalent antioxidant capacity, ferrous iron chelation activity, vitamin C and polyphenol contents were found to be higher in fresh samples of V7 and V10, than those of V1, V2, V3 and V9. In particular, V10 contained the highest phenolics (1360 mg Gallic acid equivalent per 100g); TEAC (2373 mM Trolox equivalent /100 g of fresh weight); ferrous iron chelation activity (1407 mM EDTA equivalent /100 g) and vitamin C (29.2 mg/100g). This study demonstrates that grape hybrids V7 and V10 are potential sources of nutraceutical phenolics and can thus be utilized as functional foods.

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95-102 **FEED EFFICIENCY OF RATS MAINTAINED ON A DIET WITH
VARIED CASEIN TO GLUTEN RATIOS**
Mélanie A. Mattar and Omar A. Obeid

ABSTRACT: *The contribution of cereal protein (gluten, limited in lysine) to total protein intake varies between countries and individuals and the effect of such a variation on weight gain is not clear. Thus, the objective of this study was to determine the effect of altering protein quality, achieved by varying the casein to gluten ratio of the diet, on the feed efficiency of rats. For this purpose, male Sprague-Dawley rats were randomly divided into five groups based on the casein and gluten content of the diet that constituted the sole protein sources and covered 20% of the total energy needs. Food intake and body weight were monitored every two days for a period of six weeks. The results showed that the high gluten groups had the lowest body weight, weight gain, food intake and feed efficiency. During the experimental period, both food intake per 100g body weight and feed efficiency of the pure gluten group were constant, whereas that of the other groups decreased with time. It can be concluded that under status of sufficient percentage of energy being provided from protein using two sources that more than 25% of protein from gluten would be needed for adequate growth. In addition, results indicate that the adoption of a cereal-based diet, particularly during the growth period, may require higher levels of energy intake (due to reduced feed efficiency) or even lysine supplementation.*

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103-108 **HYPERICUM PERFORATUM ALLEVIATES AGE-RELATED
FORGETTING IN RATS**
Emil Trofimiuk and Jan J. Braszko

ABSTRACT: *St. John's wort (Hypericum perforatum) is one of the popular phytomedicines. Beneficial effects of this herb in the treatment of mild to moderate depression are well known. Also, we recently described protective effects of H. perforatum against memory impairments caused by chronic stress. It is also a mild nootropic per se. In this study we tested a hypothesis that St. John's wort alleviates age-related long-term memory impairment. Middle-aged rats (84-weeks-old) displayed a significant ($p < 0.05$) decline in the retrieval of passive avoidance behaviour showing thus increased forgetting. Long-term administration of H. perforatum (350 mg/kg for*

21 days) effectively prevented this decline making the avoidance latency in the middle-aged rats as good as young animals [250 s and 236 s respectively, both significantly ($p < 0.01$) better than that in the middle-aged rats (121 s)]. These data point to alleviation of the age-related memory decline by *St. John's wort*.

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109-116 **PREPARATION OF K-SELENOCARRAGEENAN OLIGOSACCHARIDES AND DETERMINATION OF THEIR ANTIDIABETIC EFFECT**
Ziang Yao, Haige Wu and Yanyu Wang

ABSTRACT: *The relationship between diabetes and selenium (Se) compounds has been certified. The aim of our experiment was use carrageenan and sodium selenite to produce α -selenocarrageenan oligosaccharides (SCOs), which should have antidiabetic and antioxidative effects. The reaction was carried out at 60°C under acidic conditions. The product was characterized with UV spectroscopy, NMR spectroscopy, infrared spectroscopy, flame atomic absorption spectrometry (FASS) and thin layer chromatography (TLC). Our results showed that some sulfated groups on the site of the 4-sulfated- β -D-galactose units (G4) were replaced by sodium selenite and produced SCOs. The SCOs was used as a Se supplement in alloxan-induced diabetic rats, and its antidiabetic and antioxidative effects were examined. We found that SCOs could reduce the glucose concentration and restore the alloxan-induced damage to the pancreas islet, potentially via its antioxidative activity. In conclusion, we prepared α -selenocarrageenan oligosaccharides with antidiabetic and antioxidative activities.*

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117-126 **BREAKFAST CEREAL, FIBRE, DIGESTIVE PROBLEMS AND WELL-BEING**
Andrew P Smith

ABSTRACT: *Research has shown that regular breakfast cereal consumption is associated with better well-being (subjective reports of health and functioning). There is also evidence that a high fibre diet is associated with increased well-being. The present study involved a secondary analysis of baseline data from Smith et al. (2001). Initial analyses examined associations between high fibre intake and well-being (emotional distress, fatigue, cognitive difficulties and somatic symptoms). The results showed that high fibre intake was associated with increased well-being. Subsequent analyses examined whether the effects of total fibre intake could be accounted for by ingestion of specific sources of fibre, namely breakfast cereal and fruit/vegetables. The results showed that it was the breakfast cereal that was largely responsible for the increased well-being. Digestive problems are also associated with reduced well-being and a second set of analyses examined whether the benefits of fibre were due to a reduction in digestive problems. The results showed that digestive problems reduced well-being but these effects were independent of the effects of fibre.*