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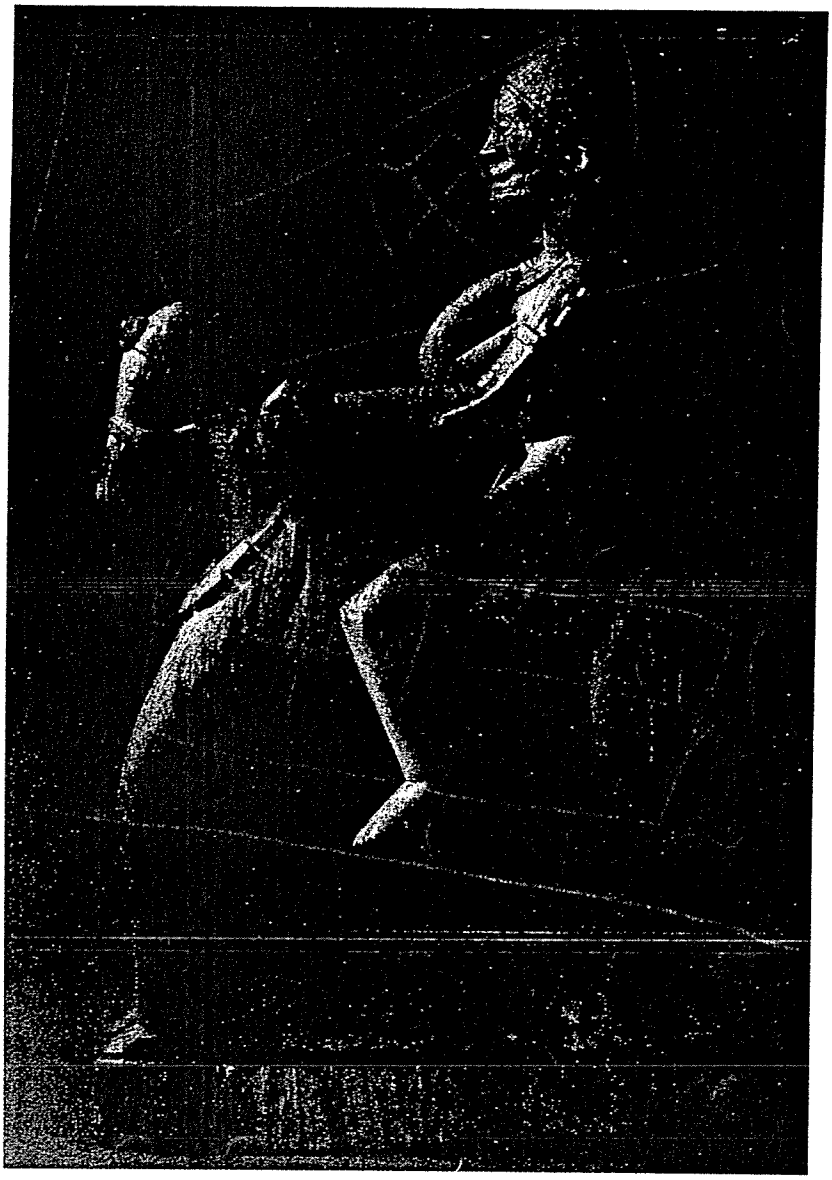

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Abstract 110

EFFECT OF AN ASTAXANTHIN CONTAINING PRODUCT ON RHEUMATOID ARTHRITIS. Nir, Y., Spiller, G., Multz, C. Health Research and Studies Center, Los Altos, CA.

Rheumatoid arthritis (RA) is a chronic destructive disorder requiring aggressive treatment. Conventional treatments present problems in terms of safety and efficacy, and the alternative therapies so far investigated have not yielded consistent results. We investigated the effect of feeding 3 times a day an extract of *Haematococcus* algae grown in Hawaii, each dose supplying 4 mg of astaxanthin, 40 µg lutein, 65 IU vitamin A as beta-carotene combined with 50 IU vitamin E, on the symptoms of RA in a double-blind, placebo-controlled, parallel design study. Twenty-one subjects were randomized to receive either the extract (14 subjects) or a placebo (7 subjects) for eight weeks. Pain and satisfaction with the ability to perform daily activities were measured at the beginning of the study, and after 4 and 8 weeks of treatment. The results showed a significant difference ($P<0.05$) both in pain and satisfaction scores between the treatment and control groups at the end of the study. Pain scores (mean ± SD, VAS scale) at 0, 4, and 8 weeks were, respectively, 0.42±0.22, 0.38±0.21, and 0.27±0.25 for the treatment group, and 0.48±0.23, 0.42±0.16, and 0.45±0.14 for the control group. Satisfaction scores were 1.75±0.72, 1.50±0.76, and 1.00±0.60 for the treatment group, and 1.83±0.69, 1.50±0.96, and 1.67±0.94 for the control group. Astaxanthin-based supplements appear to be an effective addition in the treatment of RA and further studies should be carried out with a larger number of subjects.

Abstract 111

A COMPARATIVE STUDY ON THE EFFICACY OF NIACIN, GARLIC, VITAMIN C, PANTETHINE, CHROMIUM AND GUGULIPID IN REDUCING SERUM CHOLESTEROL AND TRIGLYCERIDES: A REVIEW AND STATISTICAL ANALYSIS OF CLINICAL TRIALS FROM 1970 TO 2001. McRae M., Richardson D. National University of Health Sciences. Dept of Biochemistry and Nutrition, Lombard, Illinois.

To compare and contrast the effectiveness of six commonly known nutriceuticals in their ability to effect serum lipids. The nutriceuticals analyzed were niacin, garlic, vitamin C, pantethine, chromium and gugulipid. Studies were identified by a search on MEDLINE from 1970 to 2001. Published papers which involved clinical trials were analyzed for their content, and 160 papers were selected for analysis. The pooled weighted mean difference in the absolute change (from baseline to final measurement) of total serum cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL) and triglycerides were calculated and compared amongst each other. A one-way analysis of variance and post hoc comparisons were performed on each serum lipid group. The percentage reduction in total cholesterol for the 6 nutriceuticals are: gugulipid 19.5%, pantethine 13.9%, niacin 12.4%, garlic 9.0%, vitamin C 3.8% and chromium 2.8%. The percentage reduction in LDL for the 6 nutriceuticals are: gugulipid 19.7%, pantethine 15.5%, niacin 15.2%, garlic 7.0%, chromium 1.4% and vitamin C 0.1%. The percentage increase in HDL cholesterol for the 6 nutriceuticals are: niacin 20.4%, gugulipid 15.1%, garlic 13.1%, chromium 9.9%, pantethine 9.3%, vitamin C 1.4%. The percentage reduction in triglycerides for the 6 nutriceuticals are: gugulipid 23.3%, niacin 22.3%, pantethine 19.9%, garlic 12.6%, chromium 6.6% and vitamin C 3.5%. Gugulipid, pantethine and niacin performed significantly better than chromium and vitamin C in reduction of total cholesterol, LDL cholesterol and triglycerides. Niacin performed significantly better than vitamin C, pantethine and chromium in increasing HDL cholesterol levels. Resolution of recent problems with effective dosages of garlic is necessary, as trials prior to 1993 showed significant efficacy. More clinical trials on gugulipid and pantethine are necessary to reduce the large group variances observed. More clinical trials utilizing hyperlipidemic patient populations are required for vitamin C and chromium. It appears that vitamin C is effective in populations who have a total cholesterol level of greater than 240 mg/dl.

Abstract 112

ROLE OF COENZYME Q10 IN CLINICAL MEDICINE: AN OVERVIEW. Bliznakov E. Bhagavan H. Biomedical Research Consultants, Pompano Beach, FL and Lancaster, PA.

Coenzyme Q (coenzyme Q10 in humans), also known as ubiquinone, is a key nutrient that plays a critical role in cellular energy production as an integral part of the mitochondrial electron transport chain. In addition, coenzyme Q also functions as an efficient antioxidant and free radical scavenger, and as a membrane stabilizer. Abnormal oxidative stress and energy deficiency are implicated in the pathogenesis of diverse disease states and the cardiovascular system is often the first target. Numerous clinical trials have demonstrated a relationship between coenzyme Q10 status and progression of cardiovascular diseases, and clinical improvement following coenzyme Q10 supplementation. In addition, there are studies that demonstrate the cytoprotective and neuroprotective effects of coenzyme Q10 in various disorders such as neoplasia, infections and neurodegenerative diseases. There is also evidence for the involvement of coenzyme Q10 in the aging process. Since coenzyme Q10 shares the same biosynthetic pathway with cholesterol, the widespread use of cholesterol-lowering drugs such as statins (HMG-CoA reductase inhibitors) also results in the inhibition of coenzyme Q10 synthesis in the body, with the expected clinical consequences. This decrease in coenzyme Q10 production is involved, at least in part, in the increasing number of reports of serious side effects of statins, culminating recently with the withdrawal from the market of one of the six statins - Baycol (cerivastatin). There are other drugs in addition to statins that compromise coenzyme Q10 status, an event still not recognized by the medical profession. A logical and a practical consequence from this precis is that extended therapy with statins and other drugs that lower coenzyme Q10 status in the body should include coenzyme Q10 supplementation to support cellular energy production and also to counter oxidative stress. Furthermore, pathological states resulting from or manifested by coenzyme Q10 deficiency should also be treated with coenzyme Q10 so as to compensate this deficiency and the development of functional insufficiency.

Abstract 113

RANDOMIZED, DOUBLE BLIND, PLACEBO CONTROLLED CLINICAL TRIAL EVALUATING AN L-ARGININE, YOHIMBINE, AND GINKGO-BASED COMBINATION ON SEXUAL SATISFACTION IN HEALTHY MEN

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The amino acid L-arginine is the nitric oxide precursor for corpus cavernosum vasodilation and in this way has been demonstrated to enhance erectile function. Yohimbine is an alpha-2 blocker, shown to help sexual function by staving off ejaculation. Ginkgo is a known promoter of circulation. It was our hypothesis to test that these ingredients given in combination, in a dosage consistent with efficacious prior art, would prove to increase sexual satisfaction in men within the challenging confines of a small-scale study and a non-parametric analysis. Sixteen subjects were assigned to two groups. Eight subjects were randomized to receive an L-arginine, yohimbine, and ginkgo-based supplement (V-Factor™) or a matching placebo prior to each sexual encounter. All subjects were required to have at least one sexual encounter each week. The study duration was six weeks with all participants completing three visits (baseline, week 3, and week 6). A sexual satisfaction questionnaire was administered at each visit. All sixteen subjects finished all three assessments without dropout and all were included in the analysis. A p-value <0.05 was considered statistically significant. At week six there was a significant improvement in overall satisfaction when compared to placebo (1.00 vs. -0.50, $p<0.05$). The L-arginine, yohimbine, and ginkgo-based supplement group also had a significant time trend of improvement in satisfaction verses placebo every three weeks throughout the study (+0.50 vs. -0.25, $p<0.05$). As a result, it can be concluded that an L-arginine, yohimbine, and ginkgo-based supplement can significantly improve sexual satisfaction in otherwise healthy male subjects.

Funded in part by a grant from Vitalbasics, Inc., Portland, Maine

Abstract 114

PHYSIOLOGICAL EFFECTS OF AN EXOPOLYSACCHARIDE PRODUCED BY *LACTOBACILLUS KEFIRANOFACIENS*. H. Maeda,[1] X. Zhu,[1] S. Suzuki,[2] S. Kitamura[2]. [1]Research and Development Division, Daiwa Pharmaceutical Co., Ltd., Tokyo, Japan. [2]Graduate School of Agriculture and Biological Sciences, Osaka Prefecture University, Osaka, Japan.

Lactobacillus kefiranofaciens is known to produce an exopolysaccharide named kefiran. In the present study, we developed a new medium, rice hydrolyzate (RH) medium, for the culture of *L. kefiranofaciens*. The production of exopolysaccharide was examined in RH medium, modified MRS medium and skim milk medium, respectively. Compositional analysis, methylation analysis, specific rotation and ^1H and ^{13}C NMR spectroscopy revealed that the structures of exopolysaccharides from these three different media are essentially identical. The exopolysaccharide is composed of a hexasaccharide repeating unit and thus known as kefiran. The study on the effects of kefiran in animals demonstrated that kefiran significantly suppressed the increase of the blood pressure and reduced the serum cholesterol levels in SHRSP/Hos rats when subjects consumed excessive dietary cholesterol, and kefiran supplementation had a significant effecting lowering blood glucose in KKAy mice. Furthermore, the results of fecal moisture and wet weights of feces in constipated SD rats indicated that the administration of kefiran was effective for improving defecation. These results suggest that kefiran could be used as a functional food to prevent some nowadays very frequent diseases.

Abstract 115

EVENING READY-TO-EAT-CEREAL CONSUMPTION CONTRIBUTES TO WEIGHT LOSS. NV Dhurandhar[1,3], S Waller[1], JS Vander Wal[2], DM Klurfeld[1], MJ McBurney[4], J Daley[3] and S Bijlani[3]. [1]Department of Nutrition and Food Science and [2]Center for Health Research, Wayne State University, Detroit, MI, [3]Rochester Center for Obesity Research, Rochester Hills, MI, and [4]Kellogg Company, Battle Creek, MI

Post-dinner snacking may constitute a significant proportion of the total daily energy intake and contribute to obesity for some individuals (night snackers). Providing a structured snack such as a "ready-to-eat" breakfast cereal after dinner may help regulate excess energy intake and contribute to weight loss. To test this hypothesis, 70 men and women (BMI ≥ 25 kg/M^2; age 18-65) citing post-dinner snacking as a major source of weight management problems (for 92%) and consuming 34% of daily calories after dinner but otherwise healthy and not suffering from active bulimia, binge eating disorder or anorexia nervosa) were randomized to either "Cereal" (CR) or "No cereal" (NC) groups. For 4 weeks, the CR group was instructed to eat a standardized bowl of ready-to-eat-cereal with low-fat milk at least 30 min after dinner but no weight loss instructions were given. After the baseline measurements, the NC group continued their normal lifestyle. At baseline, the mean age, body weight and BMI did not differ significantly between the two groups. Data on those completing 4 weeks of the study were further analyzed. Body weight of the NC did not change significantly after 4 wk (paired t test; N = 29; baseline: 218.8 ± 47.5 lb; 4 wks: 218.4 ± 47.6 lb; change: -0.4 ± 3.1 lb; $p = .51$). In the CR group, 4 wk weight loss correlated positively with the number of days of cereal consumption ($r=0.42$; $p < .03$). Body weight after 4 wk was significantly lower for those eating cereal on at least 24 days (N = 15; 224.5 ± 46.3 to 222.0 ± 45.0; change: -2.5 ± 3.5 lb; $p < .02$); or for those eating cereal on at least 21 days (N=23; 234.5 ±54.2 to 232.6 ± 55.0 lb; change: -1.9 ±3.5 lb; $p < .02$). It appears that a simple and minimal intervention such as the addition of an evening snack of ready-to-eat breakfast cereal may help night snackers to lose weight. (Funded by the Kellogg Company)