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Current Topics in Nutraceutical Research 6 (4): 165-188

- 165-188 **DIETARY SUPPLEMENTS AND COLORECTAL CANCER**
Takuji Tanaka, Takeru Oyama, and Yumiko Yasui

***ABSTRACT:** Consumption of fruits and vegetables that contain many non-nutritive and nutritive compounds is associated with decreased risk of several types of cancer, including CRC (CRC) and dietary habit is instrumental in more than 50% of human CRC. Many experimental preclinical studies suggest that several non-nutritive components, belonging to different chemical groups, in foods protect against certain types of cancer, including CRC. These chemicals are known as potential ‘cancer chemopreventive agents’ that are able to suppress carcinogenesis by inhibiting multiple targets that are involved in multiple steps of carcinogenesis. Given the definite increase in the increase of CRC in the developed countries, we should determine the most effective mean of prevention and understand the mechanism(s) underlying successful prevention of CRC. Non-nutritive compounds in fruits, vegetables and other dietary constituents (teas, spices, herbs, etc.) consumed as part of the diet are attractive for*

reducing CRC occurrence by their supplementation in diet. Although epidemiologic studies showed similar associations, there have been very few intervention studies. This article will overview pathobiology of CRC and preclinical and clinical chemopreventive studies using dietary supplementation with possible chemopreventive agent(s) against CRC development.

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189-200 **ROLE OF MATERNAL NUTRITION DURING PREGNANCY IN THE DEVELOPMENT OF CHILDHOOD ASTHMA AND ALLERGIES**
Graham Devereux

ABSTRACT: *The recent increase in asthma and allergic disease in westernised countries has stimulated research to identify the environmental and/or lifestyle factors responsible for the increase. It has been hypothesised that changing diet may have contributed to the rise in asthma and allergic disease. There is growing interest in the possibility that childhood asthma may be influenced by maternal diet during pregnancy and a small number of studies have highlighted associations between childhood asthma, eczema and maternal intake of some nutrients (vitamin E, vitamin D, selenium, zinc, polyunsaturated fatty acids) during pregnancy. Maternal diet during pregnancy has the potential to influence fetal immune and airway development during a critical period of life with long term irreversible consequences for the development of immunologically mediated diseases and respiratory conditions. Intervention studies need to be carried out to establish whether modification of maternal nutrient intake during pregnancy can be used as a healthy, low cost, public health measure to reduce the prevalence of childhood asthma and allergic disease. At the present time because of insufficient evidence, women should not be advised to modify or supplement their diet during pregnancy in an attempt to reduce the risk of asthma and allergic disease in children.*

CURRENT TOPICS IN NUTRACEUTICAL RESEARCH VOLUME 6 NUMBER 4

Current Topics in Nutraceutical Research 6 (4): 201-210

201-210 **POTASSIUM MAGNESIUM HYDROXYCITRATE AT PHYSIOLOGIC LEVELS INFLUENCES VARIOUS METABOLIC PARAMETERS AND INFLAMMATION IN RATS**
Dallas L. Cloutre and Harry G. Preuss

ABSTRACT: *Using oral potassium-magnesium hydroxycitrate (KMgHCA) doses comparable to suggested human intake, effects on systolic blood pressure (SBP), glucose-insulin metabolism, inflammatory markers, blood chemistries and carageenan-induced paw edema were examined in rats. Initially, four groups of eight 8-week old male Sprague-Dawley Rats (SD) received diets supplying calories as 30% fats, 50% carbohydrates and 20% proteins. For 8 weeks, test arms received HCA (from KMgHCA) at 14 mg, 28 mg or 84 mg daily. In a second study, two groups of 6 spontaneously hypertensive rats (SHR) consuming normal rat chow mixed with 20% w/w sucrose were examined (Control or 84 mg HCA daily) to expand findings on SBP and glucose-insulin metabolism. In the first study, there were no significant differences in food intake or weight gain. The 28 mg and 84 mg doses significantly lowered SBP. In all test groups, circulating insulin levels were lower, but without significance due to variances in Control. The highest test dose significantly reduced paw edema and all doses strongly trended towards reduced CRP and TNF-alpha. There was no evidence of toxicity. In the second study, the intake of KMgHCA (84 mg daily) in genetically hypertensive rats quickly caused a significant decrease in SBP. Losartan challenge suggested the renin-angiotensin system was involved. Glucose tolerance and insulin challenges indicated that KMgHCA enhanced insulin sensitivity.*

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Current Topics in Nutraceutical Research 6 (4): 211-218

211-218 **HOMOCYSTEINE AND STROKE**
Salah Gariballa

ABSTRACT: *Epidemiological studies have demonstrated associations between elevated homocysteine and increased risk of cardiovascular diseases including stroke. A meta-analysis of prospective studies demonstrated that after accounting for known cardiovascular disease risk factors, a 25% lower homocysteine was associated with a 19% lower risk of stroke. A number of recently completed randomised trials on B vitamin homocysteine lowering and risk of stroke do not provide clear evidence of any beneficial effect, although in one trial fewer patients assigned to active treatment than to placebo had a stroke. There are many ongoing prospective, controlled intervention trials using folate, vitamin B₁₂ and vitamin B₆ as homocysteine-lowering agents, the results of which (plus future meta analyses) may provide important information as to whether these vitamins can be protective against cardiovascular diseases including stroke. However, even if homocysteine-lowering therapies prove to be effective it still does not clear up whether the beneficial effect can be ascribed to a reduction in homocysteine or to an independent effect of the B-vitamins themselves.*

Current Topics in Nutraceutical Research 6 (4): 219-230

219-230 **CYSTIC FIBROSIS AND ESSENTIAL FATTY ACIDS**
John Lloyd-Still

ABSTRACT: *The relationship between essential fatty acids and Cystic Fibrosis (CF) is complex. The gene product, cystic fibrosis transregulator protein has functions involving lipid synthesis and transport, mucus properties and secretion, infection, antimicrobial activity, inflammation and endocytosis/exocytosis. With over 1500 mutations, there is poor genotype/phenotype correlation, scant knowledge regarding gene modifiers and some evidence for environmental influences. Pancreatic insufficiency is present in 85% of patients with CF with resultant fat malabsorption, deficiencies in n-6 and n-3 fatty acids and anti-oxidants. However, there are a number of abnormalities in fatty acid metabolism that are not explained on this basis. The role of essential fatty acids as precursors of eicosanoids and their role in the proinflammatory status as well as deficiencies in certain defense mechanisms characteristic of CF have lead to attempts to modify the nutritional status. The pharmacologic effects of certain EFA in the mouse model of CF are controversial and have been applied to patients with CF with inconclusive results but longer-term studies are in progress. Increasing evidence points to a failure in regulatory function of essential fatty acids in this disease.*