Phenolic Antioxidants and Antiatherogenic Effects of Marula (Sclerocarrya birrea Subsp. caffra) Fruit Juice in Healthy Humans

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Animal Nutrition

Abstract

Antioxidant activity and composition of Israeli-grown marula (Sclerocarrya birrea subsp. caffra) fruit juice and health-promoting aspects of juice consumption on serum lipids and lipoproteins pattern in healthy volunteers were studied. Marula juice was found to contain high vitamin C and potassium levels and low sugar concentration (267 mg dL⁻¹, 328 mg dL⁻¹, and 7.3 g dL⁻¹, respectively). The juice contains a significant level of phenolics (56 mg of pyrogallol equiv dL⁻¹) and was found to be a potent antioxidant (382 mg of vitamin C equiv dL⁻¹). The antioxidant activity was resistant to pasteurization regimens and long-term freezing and slowly decreased during refrigeration, losing up to 14% of its capacity after 4 weeks. Three-week administration of the juice as a food supplement to healthy subjects significantly reduced their serum total cholesterol (by 8%), LDL-cholesterol concentration (by 17%), and triglyceride level (by 7%), increased their serum HDL-cholesterol level (by 10%), and attenuated serum oxidative stress. Upon a 4 week “washout” period, most of these parameters returned toward baseline values. Separation of the juice soluble phenolics by HPLC produced potent antioxidant fractions, tentatively containing hydrolyzable tannins, catechins, and hydroxycinnamic...
acid derivatives, which could be responsible for the observed protection against atherosclerosis risk factors following marula fruit juice consumption.