

7th Indo-Global Summit and Expo on
Food & Beverages

October 08-10, 2015 New Delhi, India



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Mango kernel extracts as potential antioxidant food additives

Antioxidants are important food additives in processed food products to prevent deterioration in quality of foods by auto-oxidation of lipids. Use of natural antioxidants has increased tremendously in recent times over synthetic ones due to the safety concerns. Fruits and vegetables are the major sources of antioxidant phytonutrients in the human diet. Mango is one of the most important tropical fruits and India ranks first in world production. During the processing of mango, mainly for mango pulp and preparation of amchur powder, peel and kernels are discarded as waste products. They form about 20 to 22% of the whole fruit. Mango seed kernels were found to possess 30 to 50 times more antioxidant activity than the pulp and can be a potential source of natural antioxidants. Mango kernels were defatted and used for the isolation of antioxidants. The method for the isolation of kernel antioxidants was standardized with respect to solvent ratio, temperature and time. The yield of antioxidants was 10% to 12.5% based on dry weight of defatted kernels. DPPH and FRAP activities of the isolated antioxidants were 30% and 10% more than the ascorbic acid respectively. Total flavonoids were 44.03 mg/g. Extracts were found to be stable when heated up to 200°C for 30 minutes. Extracts were also found to be stable in aqueous solution when heated at boiling temperature for 30 minutes. The stability of extracts was also tested at alkaline and acidic conditions. The activity of extracts did not decrease at pH-4 and pH-9. Acidulant properties of extract were tested. 0.1% addition of the extract to water decreased the pH to 4. The efficiency of protection against lipid peroxidation by kernel antioxidants was tested through incorporation in biscuits. Addition of 0.15% kernel antioxidants in cookies prevented lipid peroxidation by 48% over control when tested after 3 months of storage. The kernel antioxidants also exhibited antibacterial activity against *Bacillus cereus* and *Enterobacter* strains which are common food borne pathogens. The importance of antioxidants in human diet is ever increasing because of their myriad health protecting properties. Antioxidants are needed for neutralizing the harmful effects of free radicals formed in the human body as a result of various metabolic activities. The kernel extracts can also be used as antioxidant food supplements to alleviate oxidative stress in humans.

Biography

V Keshava Rao has completed his PhD from Kakatiya University. He is currently working as Principal Scientist in Indian Institute of Horticultural Research, India. He has published more than 15 papers in reputed journals. His research areas of interest include phyto-chemical studies in fruits and vegetables, natural colors, natural antioxidants and medicinal plants.

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