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Bio-processing to improve the nutraceuticals and bioactive properties of millet seed coat

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Abstract

Finger millet consumption is reported to have number of health beneficial effects in prevention of life style diseases . Positive effects of it may be due to the nutrients and phytochemicals present in the seed coat or the outer most layer of the grain which covers the endosperm. Generally it is coarser in nature and application of carbohydrases can improve its functional and sensory attributes. So the objective was to study certain nutraceuticals and bioactive properties of finger millet seed coat and effect of enzymatic bio-processing on their quality. Three different sample were made from seed coat fraction of finger millet such as raw (without any treatment), test (treated with carbohydrase and dried) and control (treated like test without any enzyme). As the part of analysis of nutraceuticals, characterization of vitamin E was carried out by HPLC; and free polyphenols extracted with methanol and bound with acidic methanol and analysed by Folin-Ciocalteu method. Bioactivity properties assessed by vitamin E activity calculation, total antioxidant activity measurement by phosphomolybdenum reagent method and free radical scavenging activity by DPPH+ method. It was observed that, compared to raw and control seed coat, enzyme processed test samples contain higher free polyphenols, bound polyphenols and total polyphenols. HPLC analysis showed that seed coat contains mainly gamma-tocopherols and alpha- tocopherols and enzymatic processing resulted in increase of gamma, alpha and total tocopherols. Bioactive property in terms of vitamin E activity, total antioxidant and free radical scavenging activity were also higher. It may be concluded that finger millet seed coat is rich in bioactive components and appropriate enzymatic processing to enhance its functional and sensory attributes will result in improvement of its nutraceutical content and bioactive properties which will ultimately enable its use as a health food ingredient.

Biography

Jayadeep A, male, biochemist, Ph.D from biochemistry department, University of Kerala in 1993. Worked from 1992 to 99 in the Indo-US projects as Postdoctoral Fellow, Project Scientist & Research Scientist in the University of Kerala. Since 1999 working as Scientist in CFTRI and currently working as Principal Scientist. Awarded UGC Research Fellowship(1986-91); Johns Hopkins University Overseas PDF (1992-94), IUBMB Indian Award (1994); International Nutrition Foundation & Kraft Foods Visiting Scientist Fellowship(2006). Published ~30 papers and presented in 26 conferences; patented 4; industry process 4; projects handled- external 5, industry 6 and Institute 9. Past Treasurer AFST(I)& SBC(I). Fields of research interest are nutrients, nutraceuticals, bioactivity and bioaccessibility properties of grains; bio-processing by enzymatic and biotransformation methods; development of health foods; and biochemical aspects of nutrients and natural products in human health.