

Nutraceuticals and bio-activity assays in health grains

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Generally grains are consumed in refined form and many of the present day chronic disease are due to this. Grain diversity like different coloured rice and millets like finger, foxtail and proso are traditionally used in whole form, which includes endosperm, bran and germ, for health and wellness. Objective was to assess the nutraceuticals and bioactive potential of whole forms of few millets and rice varieties by optimizing the analytical methods. Characterization of Vitamin E, oryzanol as well as carotenoid components by HPLC and spectral studies; Soluble and bound polyphenols, flavanoids, and anthocyanin by colourimetric method; bioactivity assays like vitamin E activity by calculation, free radical scavenging activity by DPPH+ and total antioxidant activity by phosphomolybdenum reagent method were carried out. Results showed the presence of delta, gamma and alpha tocotrienols which are cardio and neuro protective, and tocopherols which are antioxidant, with higher amounts in pigmented rice. Whereas gamma-tocopherol content was the highest in millets. Oryzanol characterization showed the presence of cycloartenol ferulate and 24-methylene cycloartenol feulate, which are having anti-oxidant and anti-inflammatory properties, in whole rice varieties. Carotenoid content was higher in millets and it was mainly lutein. Content of soluble and bound polyphenols was also higher in pigmented rice and millet samples, with presence of anthocyanin in black rice. Bioactivity assays showed that vitamin E activity, free radical scavenging activity and total antioxidant activity were higher in pigmented rice and millet samples. It may be concluded that differences are there in the content of nutraceuticals and bioactivity in whole forms of rice and millet varieties and innovative analytical methods have to be employed to screen the bio-potent grain forms.

Biography

Jayadeep A, Principal Scientist, CSIR-CFTRI, is Ph.D. Biochemistry from University of Kerala in 1993. He has worked from 1992 to 1999 in the International programs of Johns Hopkins University, USA & Regional Cancer Centre in the Dept: of Biochemistry, University of Kerala, India in various capacities as Postdoctoral Fellow, Project Scientist & Research Scientist, and joined CFTRI as Scientist in 1999. He was awarded UGC Research Fellowship (1986-91); Johns Hopkins University, USA, Overseas Postdoctoral Fellowship (1992-94), International Union of Biochemistry & Molecular Biology Indian Scientist Award (1994); International Nutrition Foundation & Kraft Foods, USA, Visiting Scientist Fellowship (2006). He has 30 publications, 4 patents, 5 processes, and handled 21 projects.

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