

Compositional studies and biological activities of some mash bean (*Vigna mungo* (L.) Hepper) cultivars commonly consumed in Pakistan

Abstract

Background: In recent years, the desire to adopt a healthy diet has drawn attention to legume seeds and food products derived from them. Mash bean is an important legume crop used in Pakistan however a systematic mapping of the chemical composition of mash bean seeds is lacking. Therefore seeds of four mash bean (*Vigna mungo* (L.) Hepper, family Leguminosae) cultivars (NARC-Mash-1, NARC-Mash-2, NARC-Mash-3, NARC-Mash-97) commonly consumed in Pakistan have been analyzed for their chemical composition, antioxidant potential and biological activities like inhibition of formation of advanced glycation end products (AGE) activity and tyrosinase inhibition activity. Results: The investigated cultivars varied in terms of biochemical composition to various extents. Mineral composition indicated potassium and zinc in highest and lowest amounts respectively, in all cultivars. The amino acid profile in protein of these cultivars suggested cysteine is present in lowest quantity in all cultivars while fatty acid distribution pattern indicated unsaturated fatty acids as major fatty acids in all cultivars. All cultivars were found to be rich source of tocopherols and sterols. Fourier transform infrared spectroscopy (FTIR) fingerprints of seed flour and extracts indicated major functional groups such as polysaccharides, lipids, amides, amines and amino acids. Results indicated that all investigated cultivars possessed appreciable antioxidant potential. Conclusions: All cultivars are rich source of protein and possess sufficient content of dietary fiber, a balanced amino acid profile, low saturated fatty acids and antioxidant capacity that rationalizes many traditional uses of seeds of this crop besides its nutritional importance. The collected data will be useful for academic and corporate researchers, nutritionists and clinical dieticians as well as consumers. If proper attention is paid, it may become an important export commodity and may fetch considerable foreign exchange for Pakistan.

Keyword: Nutrients; Antioxidant potential; Mash bean cultivar; Pakistan