

Induced protein polymorphisms and nutritional quality of gamma irradiation mutants of sorghum

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Abstract

Physical and biochemical analysis of protein polymorphisms in seed storage proteins of a mutant population of sorghum revealed a mutant with redirected accumulation of kafirin proteins in the germ. The change in storage proteins was accompanied by an unusually high level accumulation of free lysine and other essential amino acids in the endosperm. This mutant further displayed a significant suppression in the synthesis and accumulation of the 27 kDa α -, 24 kDa α -A1 and the 22 kDa α -A2 kafirins in the endosperm. The suppression of kafirins was counteracted by an upsurge in the synthesis and accumulation of albumins, globulins and other proteins. The data collectively suggest that sorghum has huge genetic potential for nutritional biofortification and that induced mutations can be used as an effective tool in achieving premium nutrition in staple cereals.