Variation of Antioxidant Activity of Traditional Rice Due to Gamma Irradiation

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Many traditional rice varieties are very high in nutritional value and reported to have medicinal properties, but can be experienced quality degradation due to many reasons. Irradiation is one of the best technologies that can be used in food preservation very effectively. This study was carried out to investigate the effect of gamma irradiation on antioxidant properties of ten different, commonly available traditional rice varies of Sri Lanka. The varieties including Suwandel, Madathawalu, Kuruluthuda, Pachchaperumal, Kahamala, Rankahawanu, Hichchinangi, Gonabaru, Heenati and Hatadaa were collected from North central province in Sri Lanka. The verities were irradiated at 5 kGy levels using Cobalt-60 radiation sources at Sri Lanka Gamma Center of the Atomic Energy Authority of Sri Lanka. The antioxidant activities of these rice varieties were determined by using DPPH method. The free radical scavenging activities of these rice samples were compared with Ascorbic acid and BHT as standard. The highest antioxidant activity of unprocessed raw rice was reported in Hatadaa (93.3%) followed by Hichchinangi (93.2%), Madathawalu (92.5%), Kuruluthuda (92.3%), Heenati (92.0%), Gonabaru (92.0%) and Pachchaperumal (88.2%) with respect to standard BHT (93.5%) and Ascorbic (96.0%). However, Kahamala (46.0%), Suwandel (29.0%) and Rankahawanu (35.3%) showed low antioxidant activity. No significant difference of antioxidant activity was reported in irradiated rice samples. The antioxidant activity of irradiated Hatadaa (92.6%), Hichchinangi (91.7%), Kuruluthuda (92.0%), Heenati (92.0%), Gonabaru (92.6%) were still higher and no significant reduction were recorded. The study concluded that the gamma irradiation process not considerably change the antioxidant activity of Sri Lankan traditional rice varieties.

Keywords: Antioxidant activity, Rice, Gamma irradiation