Title Effect of ionizing radiation on antinutritional features of velvet bean seeds (*Mucuna pruriens*)

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Abstract

Impact of gamma irradiation on the antinutritional constituents of seeds of *Mucuna pruriens* was assessed on exposing to doses of 2.5, 5.0, 7.5, 10, 15 and 30 kGy. Except for 2.5 kGy, the rest showed significant dose-dependent increase in phenolics. Tannin concentration did not differ significantly up to 7.5 kGy, while it significantly increased at higher doses. Excluding 2.5 kGy, the rest of the treatments showed significant decreases in the phytic acid and complete degradation was attained at 15 and 30 kGy. The l-DOPA concentration showed a dose-dependent decline. A trace amount of hemagglutination activity was seen on human erythrocytes in raw seeds, which was completely absent on irradiation (>5 kGy). Concentration of Polonium-210, a natural radionuclide falls within the admissible limits for consumption. As *Mucuna* seeds serve as food, feed or as pharmaceuticals, it may be necessary to set the ionizing radiation to a specific dose to retain optimum levels or to eliminate phenolics, tannins, phytic acid and L-DOPA. As irradiation is a physical and cold process, it may be ideal and emerge as an important technique to improve the nutritional or pharmaceutical quality of *Mucuna* seeds and its products.