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Bioactive Compounds in Velvet Bean Seeds: A Promising High Quality Legume to Attain Food Security in Developing Countries

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Abstract

In the present study, effect of certain indigenous processing methods on the levels of bioactive compounds of an under-utilised legume, velvet bean (*Mucuna pruriens*) was investigated. Ten different accessions of velvet bean seeds collected from various agro-ecological locations of the world exhibited a wide variability with respect to the levels of total free phenolics (5.24–8.65 g per 100 g DM), tannins (1.77–3.49 g per 100 g DM), L-Dopa (4.30–6.23 g per 100 g DM) and phytic acid (1.17–2.37 g per 100 g DM). Significantly higher level of total free phenolics and tannins was noticed in VB seeds collected from Zimbabwe, while Guatemala VB accession registered maximum level of L-Dopa. Among the different processing methods attempted in the present study, soaking in tamarind solution + cooking and soaking in alkaline solution + cooking treatments were found to reduce significant level of total free phenolics by 24–46 % and 36–65 %, respectively. Tannins were reduced at maximum level only under soaking in alkaline solution + cooking treatment (24–52 %). Significant level of loss of L-Dopa (6–67 %) was noticed under all the treatments of the present study. However, none of the treatments resulted in significant level of loss of phytic acid in velvet bean seeds. Further, sprouting + cooking as well as open-pan roasting were found to be optimal in retaining higher levels of bioactive compounds. Hence, such viable processing methods could be recommended for the consumption of velvet bean seeds as a natural source of health beneficial bioactive compounds, in addition to high nutritive potential.

Keywords: tannins, bioactive compounds, L-Dopa, *Mucuna pruriens*, phytic acid, processing methods, total free phenolics, velvet bean