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## Evaluation of Protein Quality of Seed Materials of *Mucuna pruriens* as a Feed Ingredient for Broiler Birds

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### Abstract

The seed materials of velvet bean (VB) [*Mucuna pruriens* (L.) DC. var. utilis (Wall. ex Wight) Baker ex Burck], an under-utilised food legume collected from South India, was analysed for nutritional profiles and also the effect of incorporation of velvet bean meal (VBM) as an alternative protein ingredient in the poultry feed on growth performance of broiler birds was investigated. The VB seed samples were found to contain appreciable levels of crude protein (265 g kg<sup>-1</sup> DM), crude lipid (65.1 g kg<sup>-1</sup> DM), neutral detergent fiber (84.3 g kg<sup>-1</sup> DM) and ash content (49.2 g kg<sup>-1</sup> DM). Soaking in sodium-bi-carbonate solution + autoclaving treatment was found to cause substantial reduction on the levels of antinutritional compounds such as tannins (decrease by 75 %), L-Dopa (81 %), phytic acid (70 %), raffinose (92 %), stachyose (89 %), verbascose (71 %), haemagglutinating activity (75 %), trypsin inhibitor activity (78 %) and  $\alpha$ -amylase inhibitor activity (77 %) without affecting the nutritional quality of VB seeds. Such processed VBM was incorporated as an alternative protein source by replacing the soybean meal protein at 0, 20, 40, 60, 80 and 100 % levels in the commercial type broiler diets. Replacement of soybean meal up to 40 % level with VBM as an alternative protein ingredient in the poultry diet, which corresponds to the inclusion of VBM up to 15.7 % in the starter feed and 11 % in the finisher phase poultry feed, exhibited better growth performance of the broiler birds without any adverse effects. Hence, after conducting a large-scale trial and extensive toxicological evaluation, VBM could be recommended as an alternative and economic source of protein ingredient in the poultry feed, which will reduce the over-dependence on the conventional legume proteins and also reduce the feed production cost to some extent and ultimately improves the growth of poultry industrial sector in many developing countries.

**Keywords:** Antinutritional compounds, broiler diet, growth performance, nutritional value, processing method, protein ingredient, velvet bean