

Nutrient Constituents, Functional Attributes and in Vitro Protein Digestibility of the Seeds of Lathyrus Plant

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Abstract

Lathyrus seeds are a major component of human diets especially in regions with marginal soils and during drought-induced famine. 20 lines comprising ten of *Lathyrus sativus* (4 local and 5 improved), 5 lines of *Lathyrus cicera* and 5 lines of *Lathyrus ochrus* were analysed for proximate constituents, energy values, nutritionally valuable minerals, functional properties and *in vitro* multi-enzyme protein digestibility. The mean values for crude protein, crude fibre, ether extract, ash, nitrogen-free extract and gross energy in *L. sativus* (local) were 24.9, 4.0, 9.8, 3.7, 51.7g/100g DM and 441.6kcal/100g respectively, while the corresponding values for the improved varieties were 22.9, 5.1, 6.7, 3.9, 55.9g/100g/DM and 417.6 kcal/100g. The corresponding proximate values for *L. cicera* were 20.4, 4.1, 3.8, 3.0, 63.3g/100gDM and 403.2kcal/100g; and *L. ochrus* were 22.9, 7.0, 6.1, 3.5, 54.8g/100gDM and 407.7kcal/100g respectively. Mg, K, Na, Ca and P were the most abundant minerals in all the species analysed. Mn was not detected in some lines of *L. sativus* (improved), *L. cicera* and *L. ochrus* while none was found in local *L. sativus* lines. Water absorption capacity (WAC) ranged from 120% in *L. sativus* (improved), *L. cicera* and *L. ochrus* to 250% in lines 527, 508 and 504 of *L. sativus*. Among the improved lines, Oil absorption capacity (OAC) ranged from 138% to 294.4% in *L. sativus* and between 184% to 294.4% *L. ochrus*. Foaming capacity and Foaming stability at 30mins were similar in *L.*

cicera and *L. ochrus* while wide variations were observed in local and improved varieties of *L. sativus* as shown by the high coefficient of variation of 31.7 and 36.2% respectively. The emulsion capacity and emulsion stability of all the species showed little interspecies variabilities. The seed flours from all the species had varying protein solubilities with changes in pH. The proteins generally had multiple maxima and minima solubilities with pH changes. The mean *in vitro* multi-enzyme protein digestibility ranged from 75.0% in *L. sativus* (local) to 77.4% in *L. cicera*.

Key Words: Lathyrus species; Functional attributes; digestibility