

BOOK OF ABSTRACTS



*XIV International Scientific Agriculture Symposium
"Agrosym 2023"
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CHARACTERISATION OF MUNG BEAN (*VIGNA RADIATA* L.) SEEDS USING FLUORESCENCE SPECTROSCOPY AND MULTIVARIATE ANALYSIS

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Abstract

Mung bean (*Vigna radiata* L.) is a leguminous plant cultivated mainly in south-east Asia and used as an ingredient in local cuisine. Its principal nutritional value is contained in its constituents such as starch, proteins, (poly)phenols, and natural antioxidants. Fluorescence spectroscopy is increasingly used as a method of choice for food analysis; due to the presence of different fluorophores originating from aromatic amino acids and secondary metabolites, it is useful for proteins and phenolics detection. In this study, the total protein and phenolic contents of mung bean seed extracts were determined using the Bradford method and Folin–Ciocalteu (FC) reagent, respectively. Antioxidant activity was determined using DPPH (2,2-Diphenyl-1-picrylhydrazyl) assay. Fluorescence spectra were recorded for a series of excitation-emission wavelengths. Further, we used the multivariate analysis on the recorded excitation-emission fluorescence matrix of the studied samples. The results showed the presence of three different fluorescence components, with the position of the emission maximum corresponding to the fluorophore of proteins (component 1 with excitation/emission peak maxima at Ex 290/Em 345 nm) and phenolics (component 2 - Ex 295/Em 395 nm and component 3 - Ex 350/Em 450 nm). This fluorescence-based method could be a useful approach for estimating the nutrient properties of leguminous food.

Keywords: *Mung bean, fluorescence spectroscopy, MCR-ALS, TPC, DPPH.*