

Isoflavones in Transylvanian soybeans genotypes [†]

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[†] Presented at the 1st International Electronic Conference on Agronomy, 3–17 May 2021. Available online: <https://iecag2021.sciforum.net/>

Abstract: Soybean (*Glycine max* L.) is an important crop, grown worldwide as the most valuable plant-based source of protein known to mankind, being one of the cheapest and convenient sources of protein available to date. Protein and lipid combined make up more than 60% of soybean seeds on dry weight basis. Besides macronutrients, these seeds contain a wide area of biologically active substances, such as isoflavones, phytates, lipids, phytoalexins, saponins, lectins, vitamins, carbohydrates, phytosterols, carotenoids, unsaturated fatty acids, etc. As a result, soy food intake has been shown to have several beneficial effects, such as those on cardiovascular diseases and cancer risk factors, on lowering the incidence of diabetes and increased tissue sensitivity to insulin, on osteoporosis' prevention, etc. Among the bioactive substances, isoflavones are important phytoestrogens, being associated mainly with women's health and increasingly used in dietary supplements. Since up to date there are no data on the content of these substances in Romanian soybeans genotypes, hence a proper assessment of isoflavones' intake from these was not possible, the major aim of this work was to establish the content of isoflavones from several commercial registered Transylvanian soybeans genotypes, created at the Research & Development Station for Agriculture, Turda. The targeted aglycones from the analyzed matrices were genistein, glycitein and daidzein, while the glycosides were daidzin, glycitin and genistin. A simple, reliable, fast and sensitive method has been developed for the analysis of these compounds using high performance liquid chromatography, accomplished with a Perkin Elmer Flexar UHPLC system with UV detection, enabling the separation of targeted isoflavones in less than 9 minutes. Despite each genotype showed a particular isoflavone pattern, depending mainly on the genetic factors; the concentrations of the studied isoflavones recorded relative small variations. The major isoflavones were found to be glycitin (up to 128.37 mg/ 100 g) and daidzin (up to 73.36 mg/ 100 g), while genistein, glycitein and daidzein were found only in trace amounts (0.24 – 1.79 mg/ 100 g). This study should provide a framework for new applied researches for both plant breeding as well as a new method for quality control of soybeans' products.

Keywords: soybean; isoflavones; phytoestrogens; HPLC