

LEGUMES AS IMPORTANT SOURCES OF PLANT PROTEINS

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INTRODUCTION

Legumes belong to leguminosae family, which is one of the largest and most important families of flowering plants and they are the richest source of nutrients (protein, starch, minerals and vitamins). Because of their high protein content, beneficial nutritional value, low cost and wide acceptability, they play an important role in the human diet. Proteins accumulate in legume seeds during development inside protein bodies and provide ammonia, carbon and amino acids during seed development. Proteins represent from 20%, in most legumes, to 40% in soybean seeds. According to Osborne classification, storage proteins are divided into four groups: albumin, globulins, prolamins and glutelins. Globulins are seed storage proteins, predominant in legume seeds and extractable in salt solutions. Legumin, vicilin and convicilin are the globulins present in legumes. The aim of this research was to compare proteins content in soybean and pea varieties.

MATERIALS AND METHODS

Five soybean and pea varieties were collected at the Agricultural Institute Osijek. The total grain proteins of soybean and pea varieties were determined on Infratec 1241 Grain Analyzer. Total soluble proteins were analyzed using a Series 200 HPLC system (Perkin Elmer, USA) coupled with a Discovery Bio Wide Pore C18-5 column (15 cm x 4.6 mm, 5 μ m), and DAD detector. Protein extractability (%) was calculated as a ratio of total soluble proteins and total grain proteins on a dry weight basis (DW).

RESULTS

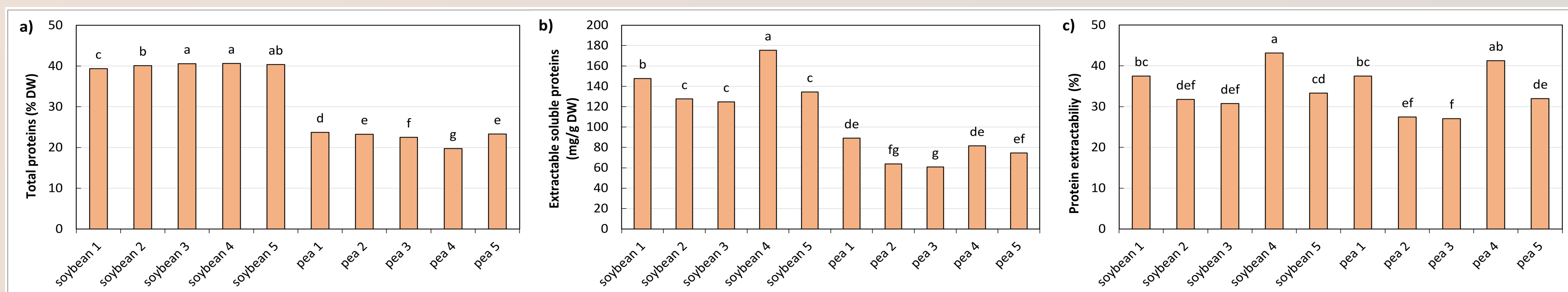


Figure 1. Total proteins (a), extractable soluble proteins (b) and proteins extractability (c) in soybean and peas varieties. Different letters indicate significant difference among varieties at $p < 0.05$ according to the LSD test.

CONCLUSIONS

On average, soybean varieties contained 40.22% of total grain proteins compared to 22.46% in peas, while the content of total soluble proteins varied from 124.80 mg/g_{DW} to 175.36 mg/g_{DM} in soybeans and from 60.84 mg/g_{DW} to 89.06 mg/g_{DW} in peas. Extractability of soluble proteins varied from 30.74% to 43.16% in soybeans and from 27.05% to 41.26% in peas, which means that the content and extractability of soluble proteins depends on the type and variety of legumes.

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