

POSTER PRESENTATIONS

PROTEIN FRACTIONS OF *Capparis spinosa* L. BUDS: AMINO ACID COMPOSITION, STRUCTURAL CHARACTERIZATION, AND HYPOGLYCEMIC AND HYPOLIPIDEMIC ACTIVITY

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Diabetes mellitus and dyslipidemia are prevalent metabolic disorders associated with cardiovascular complications, highlighting the need for natural biologically active compounds capable of simultaneously correcting carbohydrate and lipid metabolism. *Capparis spinosa* L. is a medicinal plant rich in proteins, amino acids, and other bioactive constituents with promising pharmacological potential. The aim of this study was to isolate protein fractions from *Capparis spinosa* L. buds, characterize their amino acid composition and structural properties, and evaluate their hypoglycemic and hypolipidemic activities under experimental conditions.

Protein fractions were isolated from *Capparis spinosa* L. buds by alkaline extraction followed by ammonium sulfate precipitation, dialysis, and freeze-drying. Total protein content was determined using the Kjeldahl method. Amino acid composition was analyzed by high-performance liquid chromatography (HPLC) after acid hydrolysis. Structural characterization was performed by FTIR, while hypoglycemic and hypolipidemic activities were evaluated in rats by assessing experimental hyperglycemia and serum total cholesterol, triglycerides, and low-density lipoprotein cholesterol levels.

The buds of *Capparis spinosa* L. contained 23.32% total protein, representing the highest protein content among the investigated plant organs. The developed isolation procedure yielded a stable protein preparation with favorable physicochemical properties. HPLC analysis identified a total amino acid content of 139.52 mg/g, including 75.21 mg/g (53.9%) of essential amino acids. Leucine, methionine, histidine, lysine, arginine, and glutamic acid were the predominant amino acids. FTIR analysis confirmed the characteristic structural features of proteins. The high proportion of essential amino acids emphasizes the nutritional and biological value of the isolated protein preparation and supports its potential application as a functional ingredient for metabolic health. The isolated protein fractions demonstrated pronounced biological activity, producing a 35.7% reduction in blood glucose at a dose of 150 mg/kg. In addition, significant hypolipidemic effects were observed, including reductions of 30.5% in total cholesterol, 26.4% in triglycerides, and 28.5% in low-density lipoprotein cholesterol, with efficacy comparable to the reference drug atorvastatin.

Protein fractions from *Capparis spinosa* L. buds exhibit a balanced amino acid composition and significant hypoglycemic and hypolipidemic activities, highlighting their pharmaceutical potential. These findings provide a scientific basis for further investigations aimed at elucidating the molecular mechanisms of action, standardization of the protein preparation, and development of innovative plant-derived pharmaceuticals and nutraceuticals for the prevention and treatment of metabolic disorders, including diabetes mellitus and dyslipidemia.