

ROTONDA'S RED EGGPLANT: NUTRITIONAL CHARACTERIZATION AND EXTRACTION OF HIGH ADDED VALUE BIOCOMPOUNDS USING EMERGING ELECTROTECHNOLOGIES

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Body

Rotonda's Red Eggplant belongs to the family of *Solanum aethiopicum* species, cultivated in a specific area of Potenza (Basilicata, Italy) and has gained the "Protected Designation of Origin" certification. Recently, Red Eggplant was associated with different biological properties, related to health benefits, as antioxidant, hypoglycemic, antihypertensive and hypolipidemic, probably due to its chemical composition.

The search for "greener" technologies has been one of the focus of research, having in mind industrial applications. In this sense, electrotechnologies, such as ohmic heating (OH), have been explored, showing to have potentially lower energy costs, higher extraction yields, being less time consuming and increasing the biocompounds' chemical stability.

The aim of this study was to determine the chemical/nutritional composition of Red Eggplant and to assess conventional and OH methods in the extraction and recovery of the main bio-compounds present in this material.

Red Eggplant was characterized for the nutritional profile (AOAC procedures): proteins, carbohydrates, total extractives, lipids, ash and minerals. The selected conditions for the extraction of the main biocompounds, for conventional and OH methods, were: solid/liquid ratio 1:10 (w:v), 80 °C, 25 min and water or mixture of 50% (v/v) ethanol/water as a solvent. Subsequently, assays were carried out to determine the content of proteins (Bradford), total carbohydrates (phenol-sulfuric acid) and phenolics (Folin-Ciocalteu), and antioxidant activity (FRAP and DPPH) of the obtained extracts. Monosaccharides profile after hydrolysis and phenolics were also quantified by HPLC.

Results showed that carbohydrates were the major macronutrient, followed by protein, lipids and ash. K, Ca and Mg were the major minerals. Regarding the monosaccharide composition, glucose, fructose, xylose and arabinose were the most abundant sugars. Ethanolic extractives represented approximately 46 % of the Red Eggplant composition. Independently of the solvent, higher amounts of polyphenols, proteins and carbohydrates were extracted when OH was applied. Moreover, OH extracts showed greater antioxidant activity compared to extracts obtained by the conventional extraction method. According to the polyphenol profile of the extracts the main compounds found were taxifolin, rutin and rosmarinic acid. These results demonstrate the potential of this vegetable to be used for nutraceuticals or functional food.

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Palavras-chave : Red Eggplant, Ohmic heating, Antioxidants, Functional food, Polyphenols, Biocompounds