EVALUATION OF HYDROLYTIC ENZYMES DURING EXTRACTION OF ROSA CANINA L. ROSE HIPS

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ABSTRACT

Rosehips fruits of Rosa Canina L. are rich in polyphenolic derivatives (flavonoids, proanthocyanidins, catechins, etc.), lactolipids, triterpenic acids, essential fatty acids, folic acid, vitamins B, C and E. and minerals. Fruit extracts show strong antioxidant, anti-inflammatory, immunomodulatory, anti-diabetic, anti-cancer, cardioprotective, neuroprotective and antimicrobial properties. The recovery of the bioactive compounds from , Greek origin, rosehips fruits was carried out through an environmentally friendly process, enzyme assisted extraction (EAE). The EAE has an advantage over conventional extraction methods as it minimizes the use of organic solvents, requires shorter extraction times and protects heat-sensitive bioactive molecules as it is carried out in mild temperature conditions. It is based on the hydrolysis of the plant cell wall by the appropriate enzymes (cellulolytics, hemicellulolytics, pectinolytics, proteolytics), resulting in the release of bioactive compounds that are trapped in the plant cell wall.

In the present study, for the extraction of rosehips fruit, the commercial enzyme preparations Cellic CTec2 (cellulolytic) and Cellic HTec2 (hemicellulolytic), Bioprep (pectinolytic), Alcalase (proteolytic), Viscozyme L. (proteolytic), Liquozyme(amylolytic) and Lipolase (proteolytic), were used. Taguchi design was applied to determine the optimal conditions of enzyme assisted extraction, with design factors time and enzyme load, while the response factor were the total phenolic content (TPC), total flavonoids content (TFC) and the antioxidant activity (DPPH). The most important factor in maximizing the yield of bioactive compounds is the enzyme load. The results were compared with conventional extraction (using aqueous ethanol solution). Bioprep and Alcalase formulations led to the highest recovery of bioactive compounds in the rind of the rosehips fruit of the Rosa Canina L.

KEYWORDS: Rosa Canina L., Rosehips fruits, Enzyme Assisted Extraction (EAE), Total flavonoids content (TFC), Total phenolic content (TPC)

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