PhD. Thesis Title

Modern techniques for the extraction of some active compounds with phytochemical action from plants

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Abstract

The aim of this thesis was oriented towards the valorization, through modern extraction techniques, of some active principles from various plants or vegetable by-products from the food industry. The work is structured in nine chapters, the first five being dedicated to the theoretical study of the current state related to the possibilities of valorizing the active principles of some lesser-known plants, but also of the pomace that remain from fruits and vegetables processing in food industry, and which currently is considered a waste. Also, a review of extraction techniques, both conventional or classical and modern was done, because there is a permanent concern to replace classical techniques with new extraction methods in order to transform extraction into a green operation. Optimization techniques of extraction parameters were also briefly presented, emphasizing the response surface methodology.

In the following four chapters, the results of experimental research are presented, aimed at obtaining oil from *Cnicus benedictus* and blackberry seeds, using ultrasound-assisted and microwave-assisted extraction as modern extraction techniques. The results obtained for both types of oils showed that higher extraction yields are obtained when modern extraction techniques are used compared to batch extraction, without affecting the quality of the oils obtained. The results obtained from the extraction of polyphenolic compounds and anthocyanins from blackberry and blackthorn fruits skins are also presented, the former constituting a waste from the processing of blackberries to obtain juice, and the others coming from a shrub from the spontaneous flora, less exploited in our country. The results obtained in this study were encouraging and constitute a good starting point for further research for the valorization of other active principles from blackberries and blackthorn fruits.