

A New Method of Extracting Polyphenols from Honey Using a Biosorbent Compared to the Commercial Resin Amberlite XAD2

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Abstract : A new extraction method of polyphenols from honey using a biodegradable resin was developed and compared with the common commercial resin amberlite XAD2. For this purpose, three honey samples of Algerian origin were selected for the different physico-chemical and biochemical parameters study. After extraction of the target compounds by both resins, the polyphenol content was determined, the antioxidant activity was tested, and LC-MS analyses were performed for identification and quantification. The results showed that physico-chemical and biochemical parameters meet the norms of the International Honey commission, and the H1 sample seemed to be of high quality. The optimal conditions of extraction by biodegradable resin were a pH of 3, an adsorption dose of 40 g/L, a contact time of 50 min, an extraction temperature of 60°C and no stirring. The regeneration and reuse number of both resins was three cycles. The polyphenol contents demonstrated a higher extraction efficiency of biosorbent than of XAD2, especially in H1. LC-MS analyses allowed for the identification and quantification of fifteen compounds in the different honey samples extracted using both resins and the most abundant compound was 3,4,5-trimethoxybenzoic acid. In addition, the biosorbent extracts showed stronger antioxidant activities than the XAD2 extracts.

Keywords : extraction, polyphénols, biosorbent, resin amberlite, HPLC-MS

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