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UPLC-MS method for the simultaneous determination of phenolic constituents in honey using multi-walled carbon nanotubes as solid phase sorbents

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An ultra-performance liquid chromatography-tandem mass spectrometer (UPLC-MS) method has been developed for the simultaneous separation, identification and determination of 22 phenolic constituents in honey from various floral sources from Yemen. Solid-phase extraction was used for extraction of the target phenolic constituents from honey samples, while multi-walled carbon nanotubes were used as solid phase adsorbent. The chromatographic separation of all phenolic constituents was performed on a BEH C18 column using a linear gradient elution with a binary mobile phase mixture of aqueous 0.1% formic acid and methanol. The quantitation was carried out in selected ion reaction monitoring acquisition mode. The total amount of phenolic acids, flavonoids and other phenols in each analyzed honey was found in the range of 338-3312, 122-5482, and 2.4-1342 µg/100 g of honey, respectively. 4-hydroxybenzoic acid was found to be the major phenolic acid. The main detected flavonoid was chrysin, while cinnamic acid was found to be the major other phenol compound. The regeneration of solid phase adsorbent to be reused and recovery results confirm that the proposed method could be potentially used for the routine analysis of phenolic constituents in honey extract.

Biography

Zeid Abdullah Alothman is working as a Professor in Department of Chemistry at King Saud University, Riyadh, Saudi Arabia. He completed his BSc in 1997 at King Saud University and PhD in 2006 at Oklahoma State University, Stillwater, USA. His research has been focused on "The application of chromatography separation methods in environmental, chemical and pharmaceutical studies, safe pollutants removal, and synthesis of new silica based materials for separation (packing materials for chromatographic columns)". He has guided few PhD and masters students and published book chapter in the various field of Chemistry.

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