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Development of rationally-designed polymers for α -tocopherol extraction and purification using solid phase extraction

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α -tocopherol is a valuable compound in terms of its therapeutic and industrial applications. There is an increasing focus on the natural sources of this compound, such as wheat germ, sunflower oil, vegetable oil and vegetables, because its bioactivity is observed only if it is extracted from natural resources that have not been synthesized. Since α -tocopherol is one of the minor components in the edible oil, it is essential to pay attention to the selectivity, efficiency and precision of the extraction method. The aim of this research is to develop rationally-designed polymers (RDPs) for the extraction and purification of α -tocopherol from sunflower oil as a natural source. RDPs were prepared based on the molecular imprinting principles, and then used as an adsorbent in the solid phase extraction (SPE) in order to extract and purify α -tocopherol. RDPs were synthesized using meth-acrylic acid (MAA) as a functional monomer and ethylene glycol dimethacrylate (EGDMA) as a crosslinking agent using a thermo-polymerization procedure. RDP demonstrated the recoveries of tocopherol from model solution of 94%. UV spectroscopy was used for the optimization of the solid phase extraction of α -tocopherol from the model samples. 60% ethanol was found that the best washing solution and better eluting solution was 5% acetic acid with methanol. GC separation was applied to detect and quantify the α -tocopherol in the natural sample (sunflower oil).

Biography

Eman Alghamdi completed her Master degree in Natural Products Chemistry in 2008 and became an Administrator in Department of Chemistry at King Abdul Aziz University up to 2012. After that, she has become a full-time PhD student at University of Leicester. Currently, she is pursuing her third-year research in the lab of biotechnology group under supervision of Dr. Piletska and Prof. Piletsky. She is interested in Optimization of the protocols for purification, separation and quantification of natural and synthetic compounds from different natural sources.

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