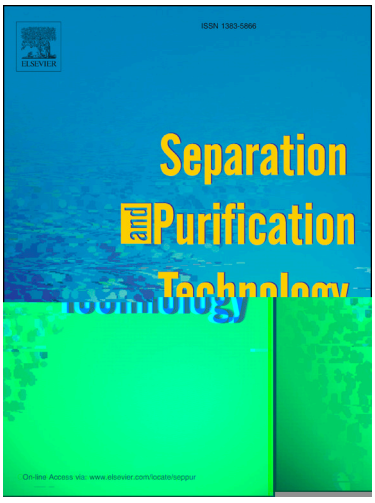

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Stereoselective interactions of profen stereomers with human plasma proteins using nano solid phase micro membrane tip extraction and chiral liquid chromatography

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Abstract

Stereoselective interactions of profen stereomers with human plasma proteins were determined using nano solid phase micro membrane tip extraction and chiral liquid chromatography. Functionalized iron nanoparticles were produced by green method and used as sorbent in solid phase micro membrane tip extraction. The produced and functionalized 1-butyl-3-methylimidazole iron nanoparticles (FBMI-INPs) were characterized utilizing FT-IR, XRD, EDXRF, TEM and SEM methods. The stereomers of baclofen, bupropion and etodolac were resolved on AmyCoat-RP (15.0 x 4.6 cm id, 5.0 µm) chiral column using water-methanol as eluent. The maximum percentage recoveries of baclofen, bupropion and etodolac stereomersin standard solutions were 95.0, 88.0 and 86.7, respectively. The values of k, α and Rs for stereo-resolution of profens were ranged from 1.53 to 3.67, 1.49 to 1.79 and 2.29 to 3.60, respectively. The percentage bindings of the S-(-)- and (+)-stereomers of baclofen, bupropion and etodolac profens stereomers with human plasma were 69.0 & 64.0, 66.5 & 62.0 and 64.0 & 60, respectively. The S-(-)-streomers of all the three profen were having greater binding capacities than (+)-stereomers with 5.0, 4.5 and 4.0% differences for the stereomers of baclofen, bupropion and etodolac. The different binding affinities of the streomers of the reported profens with serum proteins were perceived owing to their dissimilar stereochemical structures. These are the reasons that the S-(-)-stereomers of the reported profens are more active than R-(-)-stereomers.

Keywords: Stereoselective separation and interactions, Profen stereomers, Human plasma, Nano solid phase micro membrane tip extraction, Chiral-HPLC.

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