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Determination of carcinogenic bromate by uplc-ms/ms and its adsorptive removal by using anion exchange resin

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Contamination of water due to bromate is a severe health hazard. The aim of present study was to remove bromate from Water using a crosslinked polystyrene based strongly basic anion exchange resin De-Acidite FF-IP. Batch experiments were performed to study the influence of various experimental parameters such as effect of pH, contact time, temperature and effect of competing anions on bromate removal by De-Acidite FF-IP resin. At optimum parameters the removal rate of bromate was very fast and 90% removal took place in 5 min and equilibrium was established within 10 min. The presence of competitive anions reduced the bromate adsorption in the order of $Cl - > F - > CO_3^2 - > SO_4^2 - > NO_3 - > PO_4^3 -$. The practical utility of this resin has been demonstrated by removing bromate in some of the commercial bottled water from Saudi Arabia. The level of bromate was determined using a very sensitive, precise and rapid method based on ultra-performance liquid chromatography-tandem mass spectrometry.

Keywords: Adsorption; Bromate; Water; Ultra-performance liquid chromatography-tandem mass spectrometry.

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