Separation of Lactic Acid from Fermentation Broth by Ionic Liquid-modified Stationary Phase

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Three ionic liquid-modified stationary phases were synthesized for solid phase extraction of lactic acid from fermentation broth. By comparing the adsorption isotherms of lactic acid on different ionic liquid-modified stationary phases, interactions between the lactic acid and sorbents were investigated. The adsorbed amounts were then fitted into different adsorption isotherm equations. Then the imidazolium silica with the highest adsorption capacity of lactic acid was packed into a cartridge for solid phase extraction. The loading volume of the cartridge was optimized by the adsorption isotherm equations and geometry. After washing with distilled water and eluting with HCl solution (0.20 mol/L), the lactic acid was separated from interference with a recovery yield of 89.1%.