

Effect of Ionic Liquid Concentration on Retention Mechanism of Some Amino and Nucleic Acids

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In this paper, three nucleic acids such as cytosine, cytidine, and thymine and two amino acids such as D-tryptophan and N-carbobenzyloxy-D-phenylalanine were chromatographed using ionic liquid as an additive for the mobile phase in high performance liquid chromatography (HPLC). Ionic liquid 1-butyl-3-methylimidazolium tetrafluoroborate ([BMIm]⁺ [BF₄]⁻) was used. In the event that nucleic acids eluent was 5 vol. % of modifier (methanol:acetonitrile=95:5 (vol. %)) in 10 mM of sodium phosphate monobasic with addition of 0.5, 2.0, and 4.0 mmol/L of ionic liquid. Separation of nucleic acids was obtained on commercial available octadecyl silica column (4.6×150 mm i.d. and particle size 5 μm). In case of D-amino acids mobile phases were 65% methanol in water with additions of 0.5, 1.0, 2.0, 8.0, 12.0, and 15.0 mmol/L of ionic liquid. The experiments were performed on stainless steel column, 3.9×300 mm i.d., and particle size 15 μm, packed with octadecyl-bonded silica at lab. Effects of concentration of ionic liquid for retention and separation of some nucleic and amino acids were discussed. The results showed the potential application of ionic liquid as mobile phase additives in liquid chromatography.