

Separation of Nucleotides with some Ionic Liquids in RP-HPLC

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Separation of nucleotides (inosine 5'-monophosphate, uridine 5'-monophosphate, guanosine 5'-monophosphate, and thymine monophosphate disodium salts) in RP-HPLC has been studied. The work is aimed at investigating the effect of ionic liquid as modifier in mobile phase to separation of substances. The ionic liquids, 1-butyl-3-methylimidazolium tetrafluoroborate ([BMIm][BF₄]), 1-ethyl-3-methylimidazolium tetra-fluoroborate ([EMIm][BF₄]), and 1-ethyl-3-methylimidazolium methylsulfate ([EMIm][MS]), were used. The results showed that the addition of ILs affects the retention and resolution of the tested compounds. Using 13.0 mM L⁻¹ of [BMIm][BF₄] as the eluent modifier resulted a baseline separation of nucleotides without requiring gradient elution. This study demonstrates that ILs can be potentially applied as a mobile phase modifier in RP-HPLC, and hydrogen-bonding interaction and hydrophobic interaction play an important role in the retention and separation on C18 column.