# Ionic Liquids as Novel Solvent Additives to Separate Peptides

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A novel analytical approach involving the addition of an ionic liquid into the mobile phase of the thin-layer chromatography (TLC) system during the optimization of chromatographic separation of peptides was demonstrated. Different behavior of peptides in the TLC sytem was observed after the addition of 1,3-dimethylimidazolium methyl sulfate to the eluent in comparison to the system without the ionic liquid. The objective of the work was to study the effect of the addition of different contents of ionic liquid to the mobile phase comprising mostly water and to observe the behavior of peptides' retention. The potential usefulness of environmentally friendly ionic liquids for the optimization of separation of peptides was demonstrated. An increase of $R_f$ values was observed with increasing the ionic liquid content in the mobile phase. The benefits of the used approach were related to the separation achieved. Finally, quantitative structure-retention relationships (QSRR) were used for the studies on the predictions of peptides' retention in the TLC systems with the addition of ionic liquid in terms of the predictions performed recently in HPLC systems.

*Key words:* Ionic Liquids, Peptide Separation, Quantitative Structure-Retention Relationships (QSRR)