

Development of Ecofriendly Ionic Liquid Modified Reverse Phase Liquid Chromatography Method for Simultaneous Determination of Anti-Hyperlipidemic Drugs

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Abstract : Among the analytical techniques, reverse phase liquid chromatography (RPLC) is currently used in pharmaceutical industry. Ecofriendly analytical chemistry offers the advantages of decreasing the environmental impact with the advantage of increasing operator safety which constituted a topic of industrial interest. Recently, ionic liquids have been successfully used to reduce or eliminate the conventional organic toxic solvents. In the current work, a simple and ecofriendly ionic liquid modified RPLC (IL-RPLC) method has been firstly developed and compared with RPLC under acidic and neutral mobile phase conditions for simultaneous determination of atorvastatin-calcium, rosuvastatin and simvastatin. Several chromatographic effective parameters have been changed in a systematic way. Adequate results have been achieved by mixing ILs with ethanol as a mobile phase under neutral conditions at 1 mL/min flow rate on C18 column. The developed IL-RPLC method has been validated for the quantitative determination of drugs in pharmaceutical formulations. The method showed excellent linearity for analytes in a wide range of concentrations with acceptable precise and accurate data. The current IL-RPLC technique could have vast applications particularly under neutral conditions for simple and greener (bio)analytical applications of pharmaceuticals.

Keywords : ionic liquid, RPLC, anti-hyperlipidemic drugs, ecofriendly

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