

High-performance liquid chromatographic separation of a complex mixture of diuretics using a micellar mobile phase of sodium dodecyl sulphate. Application to human urine samples

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Abstract-

A systematic optimization of the HPLC separation of a complex mixture containing 19 diuretics by micellar liquid chromatography using sodium dodecyl sulphate (SDS), a Hypersil (150 mmx3.0 mm I.D., 5 microm) C18 column, a flow-rate of 0.5 ml min⁻¹ and UV absorbance detection has been carried out. Several mobile phases consisting of SDS and organic modifiers such as acetonitrile, tetrahydrofuran, propanol, butanol or pentanol, and the pH adjusted to 3.2, were tested. The effect of the organic modifier and SDS concentration on the retention behavior and separation of the diuretics was investigated. A mobile phase containing 40 mM SDS and 4% tetrahydrofuran was finally selected. Under these conditions, 14 out of 19 diuretics were separated in about 31 min. A bivariant optimization method for the mobile phase SDS-tetrahydrofuran corroborated the above results. The effect of temperature on the retention was also studied, and 50 degrees C was selected. The optimized method was applied to human urine samples of subjects administered Diurex (tablets containing 20 mg of the active ingredient xipamide) without sample preparation.

Index Terms- Diuretics

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