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Determination of piperidinium ionic liquid cations in environmental water samples by solid phase extraction and hydrophilic interaction liquid chromatography

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Highlights

- Determination of piperidinium ionic liquid cations in environmental water
- Effective enrichment and purification of the sample by solid phase extraction
- Hydrophilic interaction liquid chromatography of indirect ultraviolet detection
- Imidazolium ionic liquids as background ultraviolet absorbents and eluting agents

Abstract: This paper presents a novel analytical method for the determination of piperidinium ionic liquid cations in environmental water by hydrophilic interaction liquid chromatography and solid-phase extraction technology. The left standing, centrifuged and filtered river water samples were first purified and concentrated through the C18 solid phase extraction column, and eluted with 0.02 mol/L hydrochloric acid prepared in methanol and deionized water (80/20, v/v). Then the eluents were analyzed by a hydrophilic column combined with 0.8 mmol/L 1-propyl-3-methyl imidazolium tetrafluoroborate aqueous solution/acetonitrile (40/60, v/v) as the mobile phase and indirect ultraviolet detection. The detection limits of piperidinium cations were less than 0.4 mg/L. The relative standard deviations were less than 0.6%. The method has been successfully applied to the determination of piperidinium cations in Songhua River water