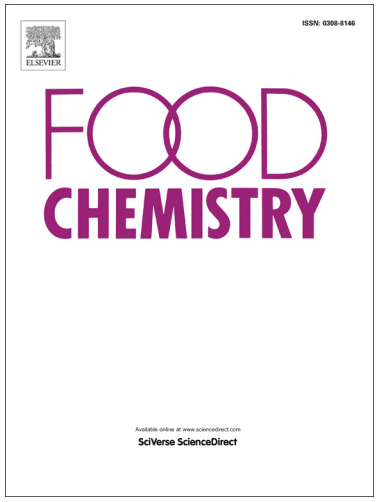

Analytical Methods

Determination of chlorophenols in honey samples using in-situ Ionic Liquid-Dispersive Liquid-Liquid Microextraction as a pretreatment method followed by high-performance liquid chromatography

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Determination of chlorophenols in honey samples using in-situ Ionic Liquid-Dispersive Liquid-Liquid Microextraction as a pretreatment method followed by high-performance liquid chromatography

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Abstract

In-situ ionic liquid-dispersive liquid-liquid microextraction (IL-DLLME) method was developed as a pretreatment method for the detection of six chlorophenols (CPs) in honey samples. The hydrophobic ionic liquid [C_4MIM][NTf_2], formed in-situ by the hydrophilic ionic liquid [C_4MIM][BF_4] and the ion exchange reagent $LiNTf_2$ was used as the microextractant solvent of CPs from honey sample. Then the enriched analytes were back-extracted into 40 μL of 0.14 M NaOH solution and finally subjected to analysis by high-performance liquid chromatography. The method showed low limit of detection of CPs, 0.8 to 3.2 μg/L and high enrichment factor, 34 to 65 with the recoveries range from 94.49 to 114.33%. The method is simple, rapid, environmentally friendly and with high extraction efficiency.

Keywords: chlorophenols; honey; high-performance liquid chromatography (HPLC); in-situ ionic liquid-dispersive liquid-liquid microextraction (IL-DLLME); pretreatment.

1. Introduction

Chlorophenols (CPs) are a group of organochlorides of phenol that contains one or more covalently bonded chlorine atoms, which can be divided into five groups named mono-chlorophenols (2-CP, 3-CP, 4-CP), dichlorophenols (DCPs), trichlorophenols (TCPs), tetrachlophenols (TeCPs) and pentachlorophenols (PCPs). Chlorophenols are chemicals with high toxicity including

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