

研究论文

## 固相萃取-高效液相色谱法测定水果和果酱中的6种对羟基苯甲酸酯

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**摘要** 建立了固相萃取-高效液相色谱(SPE-HPLC)同时测定水果和果酱中6种对羟基苯甲酸酯(对羟基苯甲酸甲酯、对羟基苯甲酸乙酯、对羟基苯甲酸异丙酯、对羟基苯甲酸丙酯、对羟基苯甲酸异丁酯和对羟基苯甲酸丁酯)含量的方法。经Oasis HLB固相萃取柱净化的样品采用HPLC分离,优化的色谱条件为采用Symmetry-C18色谱柱分离,流动相为柠檬酸缓冲液-甲醇(体积比为48:52),流速1.0 mL/min,检测波长258 nm,测定温度40 ℃。6种对羟基苯甲酸酯的线性范围为0.1~20.0 mg/L( $r=0.9999$ ),回收率为82.8%~115.5%,相对标准偏差为0.2%~6.8%( $n=6$ )。对羟基苯甲酸甲酯、对羟基苯甲酸乙酯、对羟基苯甲酸异丙酯、对羟基苯甲酸丙酯的检出限( $S/N=3$ )为0.1 mg/kg,定量限( $S/N=10$ )为0.3 mg/kg;对羟基苯甲酸异丁酯和对羟基苯甲酸丁酯的检出限为0.2 mg/kg,定量限为0.6 mg/kg。该方法简便快速、结果准确、重现性好,可作为测定水果及果酱中多种对羟基苯甲酸酯的有效方法。

**关键词** [固相萃取](#) [高效液相色谱法](#) [对羟基苯甲酸酯](#) [水果](#) [果酱](#)

## Determination of six p-hydroxybenzoates in fruits and jams using solid-phase extraction-high performance liquid chromatography

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### Abstract

A method was developed for the determination of 6 p-hydroxybenzoates (methyl p-hydroxybenzoate (MHB), ethyl p-hydroxybenzoate (EHB), isopropyl p-hydroxybenzoate (IPHB), propyl p-hydroxybenzoate (PHB), isobutyl p-hydroxybenzoate (IBHB) and butyl p-hydroxybenzoate (BHB)) in fruits and jams using the combination of solid-phase extraction and high performance liquid chromatography (SPE-HPLC). Two different extraction solutions and three different mobile phases were tested for p-hydroxybenzoates analysis, and finally ethanol was used as the extraction solvent and methanol-citric acid buffer was selected as the mobile phase. The sample was extracted, and purified by an Oasis HLB solid-phase extraction cartridge, then separated on a Symmetry-C18 column and detected at the wave length of 258 nm. The results showed that all the calibration graphs were linear in the concentration range of 0.1~20.0 mg/L ( $r=0.9999$ ). The detection limits and quantification limits were 0.1 mg/kg ( $S/N=3$ ) and 0.3 mg/kg ( $S/N=10$ ) respectively for MHB, EHB, IPHB and PHB, 0.2 mg/kg ( $S/N=3$ ) and 0.6 mg/kg ( $S/N=10$ ) respectively for IBHB and BHB. The average recoveries were between 82.8% and 115.5% with the relative standard deviations (RSDs) of 0.2%~6.8%( $n=6$ ). The method is simple, rapid, sensitive and reproducible, and can be used for the routine analysis of the p-hydroxybenzoates in fruits and jams.

**Key words** [solid phase extraction \(SPE\)](#) [high performance liquid chromatography \(HPLC\)](#) [p-hydroxybenzoates](#) [fruits](#) [jams](#)

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