

研究论文

高效液相色谱-荧光检测法同时测定全血中5种香豆素类杀鼠剂

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摘要 建立了同时测定全血中杀鼠灵、杀鼠迷、溴敌隆、氟鼠灵与溴鼠灵等5种香豆素类杀鼠剂的简便、灵敏、准确的高效液相色谱-变波长荧光分析方法。全血样品经乙酸乙酯提取后,在XDB C18柱(150 mm×2.1 mm, 5 μm)上以甲醇-0.2%乙酸水溶液(体积比为88: 12)混合液为流动相,采用荧光变波长程序检测,同时通过建立各杀鼠剂的荧光光谱库,利用谱库检索,提高定性的准确度。各杀鼠剂的线性范围为0.01~10.00 mg/L(杀鼠灵为0.05~10.00 mg/L),检出限为0.01~0.05 mg/L,方法的加标回收率为81%~98%,其相对标准偏差(RSD)为3.8%~8.5%。该法适用于中毒病人的中毒诊断检测。

关键词 [高效液相色谱法](#); [荧光检测](#); [杀鼠灵](#) [杀鼠迷](#) [溴敌隆](#) [氟鼠灵](#) [溴鼠灵](#) [全血](#)

分类号

Determination of Five 4-Hydroxycoumarin Rodenticides in Whole Blood by High Performance Liquid Chromatography with Fluorescence Detection

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Abstract

A simple, accurate and sensitive method has been developed for the simultaneous determination of warfarin, coumatetralyl, bromadiolone, flocoumafen and brodifacoum in whole blood by high performance liquid chromatography (HPLC) with fluorescence detection. The five 4-hydroxycoumarin rodenticides in whole blood were extracted by ethyl acetate, separated on XDB C18 column(150 mm×2.1 mm, 5 μm) by using the mobile phase consisting of methanol-0.2% acetic acid aqueous solution (88: 12, v/v) at a flow rate of 0.5 mL/min and detected with a variational time program for fluorescence wavelength. Each analyte was qualitatively determined with its fluorescence excitation spectrum, fluorescence emission spectrum and retention time being compared with those of the reference standard, and quantified with external calibration method. The linear range was 0.01-10.00 mg/L and the limit of quantification was 0.01 mg/L except warfarin of which the corresponding results were 0.05-10.00 mg/L and 0.05 mg/L. The recoveries were between 81% and 98% and the relative standard deviations (RSDs) were between 3.8% and 8.5%. This method can be used in the diagnosis of the clinical poisoned patients.

Key words [high performance liquid chromatography \(HPLC\)](#) [fluorescence detection](#) [warfarin](#) [coumatetralyl](#) [bromadiolone](#) [flocoumafen](#) [brodifacoum](#) [whole blood](#)

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