

## 高效阴离子交换色谱-脉冲安培法检测小鼠尿液中的甘露醇、单糖和乳果糖

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### Determination of mannitol, monosaccharides and lactulose in mouse urine by high performance anion exchange chromatography coupled with pulsed amperometric detection

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摘要	参考文献	相关文章
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**摘要** 采用高效阴离子交换色谱-脉冲安培检测法(HPAEC-PAD)建立了小鼠尿液中甘露醇、单糖(包括半乳糖、葡萄糖、甘露糖和果糖)和乳果糖的分析方法。样品经离心沉淀除去蛋白并过分子膜,以CarboPacTM PA1阴离子交换柱为分离柱,采用NaOH梯度淋洗,脉冲安培四电位检测。结果表明,甘露醇、半乳糖、葡萄糖、甘露糖、果糖和乳果糖在0.1~5.0 mg/L内线性良好,线性相关系数 $r^2$ 为0.988~0.999,样品加标回收率为95.5%~104.2%,检出限为0.0013~0.0048 mg/L。此法准确、快速、简便,能同时对6种糖类化合物进行分析,可以跟踪检测整个糖类代谢过程中甘露醇、单糖和乳果糖之间的代谢关系。

**关键词:** 高效阴离子交换色谱 脉冲安培检测法 乳果糖 甘露醇 单糖

**Abstract:** A method of high performance anion exchange chromatography (HPAEC) coupled with pulsed amperometric detection (PAD) was established for the determination of mannitol, monosaccharides (galactose, glucose, mannose and fructose) and lactulose in mouse urine. The samples were first centrifuged, and then filtered through molecular film to eliminate the proteins. The analysis was performed on a CarboPacTM PA1 column using gradient elution with water and 250 mmol/L sodium hydroxide as the mobile phase. All of the six carbohydrates had good linear relationships ( $0.988 \leq r^2 \leq 0.999$ ) in the range of 0.1~5.0 mg/L. The recoveries were between 95.5% and 104.2% and the limits of detection were between 0.0013 and 0.0048 mg/L. The method is accurate, fast and simple. It can be used to analyse six carbohydrates simultaneously and track the metabolic relationships among mannitol, monosaccharides and lactulose during the metabolism of the carbohydrates.

**Keywords:** high performance anion exchange chromatography pulsed amperometric detection lactulose mannitol monosaccharide

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