

研究论文

超高效液相色谱-串联三重四极杆质谱分析法对大鼠血浆中三氯生的代谢和动力学研究

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摘要 三氯生是一种被广泛应用在家庭卫生用品中的抗菌消毒剂。虽然其本身不具有很强的毒性, 但在生物体内的代谢变化是否对生物和人体有害我们还不得而知。因此, 研究三氯生在动物体内的代谢与动力学情况是具有重要意义。本文采用超高效液相色谱串联三级四极杆质谱法来测定口服给药 (5 mg/kg) 后大鼠血浆中的三氯生的含量及其代谢产物。相对于多反应监测 (MRM) 技术, 尽管其有较好的最低检测限, 但选择离子监测 (SIR, 又称为 SIM) 有更好的方法验证参数。在本试验中, 选择离子监测方法检测限为 10.8 ng/mL, 方法的回收率、准确度、精密度和重现性都较高。用该方法测定的三氯生在大鼠体内的消除半衰期为 (48.5 ± 10.5) h。同时, 还鉴定出其三氯生血浆中有分别被羟基化加磺酸化、葡萄糖醛酸化以及磺酸化的 4 个代谢产物。

关键词 [三氯生](#) [超高效液相色谱串联三级四极杆质谱](#) [大鼠血浆](#)

Investigation on metabolism and pharmacokinetics of triclosan in rat plasma by using UPLC-triple quadrupole MS

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Abstract

Triclosan has been widely used as a disinfectant in human health care products. Although this particular chemical is less toxic, its biotransformation products might have toxicity to human. Therefore, understanding the pharmacokinetics and metabolism of triclosan in animal and human body is important. Plasma samples from SD rats collected after the oral administration of 5 mg/kg triclosan were analyzed by ultra performance liquid chromatography (UPLC)-triple quadrupole mass spectrometry (TQMS) to support the pharmacokinetic study of triclosan. The method development was conducted with selected-ion-recording (SIR, also called SIM for selected-ion-monitoring) mode in ESI-MS and multiple-ion-monitoring (MRM) mode in MS/MS and the obtained results were compared. While MRM provided lower detection limits, its other method validation parameters were worse than those of SIR due to the poor fragmentation of triclosan. The developed SIR method provided limit of quantification of 10.8 ng/mL in plasma. The recovery, accuracy, precision and repeatability were satisfactory. The pharmacokinetic data of triclosan in the rats were presented including the half time of elimination that was (48.5 ± 10.5) h, indicating that the elimination of triclosan in the rat was slow. Two hydroxylated and sulfonated triclosan, one glucuronidated triclosan, and one sulfonated triclosan were identified in the rat plasma samples

Key words [triclosan](#) [UPLC-triple quadrupole MS](#) [rat plasma](#)

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