Simultaneous determination of meptazinol and its major metabolites by LC-MS/MS in human plasma

Yun-Bin Zhao, Qing-Ye Yan, Ke Zhang, Ya-Lu Zhang and Heng Zheng
Huazhong University of Science and Technology, China

An efficient and sensitive method based on liquid chromatography coupled with tandem mass spectrometry (LC–MS/MS) has been developed for the simultaneous determination of meptazinol and its three metabolites, 7-oxomeptazinol (M₁), 3-hydroxyethylmeptazinol (M₂) and N-desmethylmeptazinol (M₃), in human plasma. After enzymolysis and protein precipitation, chromatographic separation within 6.0 minutes was obtained from Welch Ultimate XB-C18 column using gradient elution. Meptazinol-d₃ was used for the internal standard and the analytes were simultaneously determined by using the following [M+H]⁺ transitions: m/z 234.2→107.2 for meptazinol, m/z 248.2→107.1 for M₁, m/z 250.1→107.1 for M₂ and m/z 220.2→107.0 for M₃. The calibration curves were prepared in the concentration ranges of 100-100000 ng/mL for meptazinol, 5-5000 ng/mL for M₁, 5-500 ng/mL for M₂ and 50-20000 ng/mL for M₃. The relative errors ranged from -6.85% to 3.33%, -5.40% to 4.30%, -5.80% to 2.80% and -4.27% to 8.89% for meptazinol, M₁, M₂ and M₃, respectively. This method has been successfully applied to the determination of meptazinol and its metabolites in plasma of eight healthy volunteers who had a single oral administration of 400 mg hydrochloride meptazinol capsule.

zhaoyunb@mail.hust.edu.cn