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

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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 ( $M_1$ ), 3-hydroxyethylmeptazinol ( $M_2$ ) and N-desmethylmeptazinol ( $M_3$ ), 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 $\rightarrow$ 107.2 for meptazinol,  $m/z$  248.2 $\rightarrow$ 107.1 for  $M_1$ ,  $m/z$  250.1 $\rightarrow$ 107.1 for  $M_2$  and  $m/z$  220.2 $\rightarrow$ 107.0 for  $M_3$ . The calibration curves were prepared in the concentration ranges of 100-100000 ng/mL for meptazinol, 5-5000 ng/mL for  $M_1$ , 5-500 ng/mL for  $M_2$  and 50-20000 ng/mL for  $M_3$ . 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,  $M_1$ ,  $M_2$  and  $M_3$ , 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.

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