Simultaneous determination of ciprofloxacin hydrochloride and metronidazole in spiked human plasma by ultra performance liquid chromatography-tandem mass spectroscopy

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Abstract

Ciprofloxacin HCl (CIP) and Metronidazole (MET) are antibacterial drugs used in combination for treatment of mixed aerobic/anaerobic infections. An UPLC-MS/MS method was developed for the simultaneous estimation of CIP and MET in spiked human plasma using sildenafil citrate as an internal standard (IS). Protein precipitation was used for analyte extraction. The chromatographic separation was completed within 6 min using a mobile phase of 0.1% formic acid in water and acetonitrile (70: 30, v/v), Zorbax C18, 100 x 4.6 mm, 3.5 μm analytical column, at a flow rate of 0.5 mL min-1. Multiple reaction monitoring (MRM) transitions were measured in the positive ion mode. Validation of the method showed standard curves to be linear in the range of 10-4000 ng mL-1 for CIP and 30-12000 ng mL-1 for MET with mean correlation coefficient exceeding 0.999. In human plasma, CIP and MET were stable for at least 36 days at –70 ± 5 °C, 6 hours at ambient temperature and after three freeze thaw cycles. After extraction from plasma, the samples were stable in auto sampler at 22 °C for 6 hours. The method was simple, specific, sensitive, precise, accurate and suitable for bioequivalence and pharmacokinetic studies.

3nd FUE International Conference of Pharmaceutical Sciences (3rd FUE ICPS) - 2015, February