
Poster

[P25-1] P25-1: Anti-infective drugs (1): Aminoglycosides and beta-lactams

Chair: Andrew McLachlan, Australia

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[P25-1-5] A high performance liquid chromatography method for the determination of doripenem in human plasma and dialysate

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Background

Doripenem is a broad spectrum parenteral carbapenem antibiotic with activity against Gram-positive, Gram-negative, and anaerobic bacteria and appears to be a potent antipseudomonal carbapenem. Doripenem is indicated for the treatment of moderate to severe bacterial infection in hospitalized patients. Its concentration in the target site is an important determinant of carbapenem efficacy. Doripenem is primarily eliminated by the kidneys and can be removed by hemodialysis in end-stage renal disease (ESRD) setting. Currently, there is no standard method for monitoring doripenem concentration in plasma and dialysate.

Methods

In this study, a high performance liquid chromatography (HPLC) method was developed and validated to measure doripenem concentration in both plasma and spent dialysate. A reversed phase column (C18; 5 mm, 4.6x100 mm) was used as a stationary phase. The mobile phase consist of mixture of methanol and 0.1% phosphoric acid (15:85, v/v) with flow rate of 1 ml/min. Meropenem was used as the internal standard (IS). Doripenem and IS were detected by ultraviolet absorbance at 320 nm. The solid phase extraction technique with the Oasis HLB extraction cartridge was used for sample preparation.

Results

The retention time of doripenem and IS were 3.3 and 7.5 minutes, respectively. The calibration curves for doripenem in plasma and spent dialysate were linear over a range of 0.5-80 mg/ml with the correlation coefficients of 0.9985 and 0.9992, respectively. The limit of detection (LOD) and the limit of quantitation (LOQ) were 0.3 mg/ml and 0.5 mg/ml for both plasma and spent dialysate.

Conclusions

The assay is practical and has been applied successfully in the analysis of doripenem concentration in human plasma and dialysate. It is useful to use for estimation dialytic doripenem removal during a pharmacokinetic study.