Journal of the Medical Association of Thailand, Vol 96, No 2

Rapid High Performance Liquid Chromatographic Assay for Determination of Voriconazole Concentration in Human Plasma

Kantima Sangsiriwut, Methee Chayakulkeeree

Abstract

Background: Blood voriconazole level is affected by several factors and concentration of voriconazole in patient's plasma is crucial for treatment response.
Objective: To develop and validate a method of high performance liquid chromatography (HPLC) for determination of plasma voriconazole level.
Material and Method: One-hundred and twenty microlitres of plasma sample was extracted with 6% perchloric acid. The extracted plasma was separated on a reversed-phase C18 column with isocratic phase which consists of acetonitrile and Milli-Q-water (68:32, vol/vol). The limits of quantitation, accuracy, precision, stability and recovery were validated. Plasma samples from 10 patients receiving voriconazole during treatment of invasive fungal diseases were collected for voriconazole assays.
Results: The lower limit of quantitation was 0.2 µg/mL. Linearity was demonstrated from 0.2 µg/mL to 20 µg/mL with 0.98 correlation coefficient value. Intra-day and inter-day variability of the voriconazole plasma concentration ranged from 0.78% to 3.01% and 1.52% to 4%, respectively. Accuracy ranges from 99.3%-101%. The extraction recovery ranges from 99.2%-101%. Plasma voriconazole level in patients showed significantly variable from patient to patient and the levels were higher during the first 2 weeks of voriconazole treatment.
Conclusion: The present method is simple, accurate, and precise for measurement of voriconazole plasma concentrations and can be applied for routine laboratory. Significant variability of voriconazole level in patient plasma highlights the importance of therapeutic antifungal drug monitoring in patients receiving voriconazole.

Keywords: High performance liquid chromatography, HPLC, Voriconazole, Validation, Therapeutic drug monitoring, Antifungal agent

Full Text: PDF

The Medical Association of Thailand
Address: 4th Floor, Royal Golden Jubilee Building, 2 Soi Soonvijai, New Petchburi Road, Bangkok 10310, Thailand
Telephone: 0-2716-6102, 0-2716-6962 press 0 Fax: 0-2314-6305
E-mail: jmedassocthai@yahoo.com, math@loxinfo.co.th