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Development of LC-MS/MS method for determination of metronidazole in human plasma and human bile

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In this article a highly sensitive, selective LC/MS-MS assay was developed for the quantitation of metronidazole in human plasma and human bile using metronidazole-d4 as the internal standard (IS). The samples were extracted from 100 μ L biological samples by liquid-liquid extraction. The samples obtained were separated by using a YMC hydrosphere C18 (50 x 2.0 mm, 3 μ m) with isocratic elution. The mobile phase consists of acetonitrile and 10.0 mM ammonium formate in water, pH 4.00 (80:20, v/v) as the mobile phase at a flow rate of 0.25 mL min⁻¹. The assay was linear over a concentration range of 50 to 20,000 ng mL⁻¹ for all analytes in both biological samples. A triple quadrupole

mass spectrometer system equipped with turbo ion spray source and operated in multiple reaction monitoring mode was used for the detection and quantification of metronidazole. The results of validation testing for precision and accuracy, selectivity, matrix effects, recovery and stability complied with current bioanalytical guidelines. A run time of <3 min for each sample made it possible to analyze a large number of biological samples per day. The method is the first reported application for the analysis of metronidazole in both human plasma and bile and it can be used to support a wide range of clinical studies.

Biography

Ji-yoon Cho graduated from the Department of Oriental Medicine in Kyung-Hee University and is currently in the Master of Pharmaceutical Analysis from Kyung-Hee University, Korea.

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