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Development of quantitative analytical methods and its application for pharmacokinetics method for Celecoxib and metabolites

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Quantitative analytical method for the simultaneous detection of celecoxib and its two main metabolites, hydroxycelecoxib Q(celecoxib-OH) and celecoxib carboxylic acid (celecoxib-COOH),in rat plasma was developed using liquid chromatography-tandem mass spectrometry (LC-MS/MS) was developed. The plasma sample was prepared through simple protein precipitation, and the reconstitution solution (0.1% formic acid in 50% methanol) was optimized to achieve the best peak shape and recovery. The analytes were separated using an Atlantis T3 column (2.1 mm × 100 mm, 3 \square m), and the mobile phase was composed of 10 mM ammonium formate in either 5% acetonitrile or 95% acetonitrile. The detection of the analytes was performed in alternating polarity switching mode using electrospray ionization. As celecoxib-OH and celecoxib-COOH were slightly unstable following freeze-thaw cycles and long-term storage at -80° C in stability tests, every analysis was carefully conducted with one-freeze thaw cycle and a short storage duration (<1 week). Acceptable accuracy (<15%) and precision (<15%) were obtaine din intra- and inter-day validations. The method was successfully applied to the pharmacokinetic study of celecoxib-COOH and celecoxib-COOH following the oral administration of celecoxib in rats at a dose of 10 mg/kg. Comparing the related pharmacokinetic parameters of celecoxib and its metabolites, celecoxib was quickly metabolized into celecoxib-COOH in short intervals. The AUCs for the two metabolites were less than 10% of that for celecoxib, indicating that the rate of celecoxib metabolism was low.

Biography

Byung Hwa Jung has completed her Ph.D from Seoul National University at 2000 and postdoctoral studies from University of North Carolina at Chapel Hill, school of pharmacy at 2004. She is a principal researcher and Center Head of Molecular Recognition Research Center, at Korea Institute of Science and Technology (KIST). She is also an adjunct professor of University of Science and Technology. She has published more than 60 papers in reputed journals and serving as an editorial board member of repute.

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