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Simultaneous quantification of the 3 perfluorinated compounds in rat plasma and tissues and its application to pharmacokinetics and tissue distribution

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Per fluorinated compounds (PFCs) are a group of the synthetic chemicals that have many manufacturing and industrial applications. The PFCs affected the neurotoxicity are highly stable, virtually non-biodegradable and extremely persistent. Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS) and Perfluorohexane sulfonic acid (PFHxS) are included in PFCs and these have been detected in the environment widely. This study was to develop and validate a simple, rapid and selective determination method of PFOA, PFOS and PFHxS for rat plasma and tissue. The analytes and internal standards (IS) weresimply extracted byliquid-liquid extraction after protein precipitation with acetonitrile. Chromatography was carried out on Halo C18 column with a gradient mobile phase comprised of methanol and 5 mM ammonium acetate buffer. The three analytes were detected with a mass spectrometer using a multiple reaction monitoring (MRM) mode with negative electrospray ionization. The chromatograms showed good resolution and selectivity and no interference by plasma and tissue constituents. The standard curves for PFOA, PFOS and PFHxS in rat plasma and tissue samplewere linear over the concentration ranges of 1–1000 ng/ml with correlation coefficients greater than 0.995. Inter- or intra-batch coefficients of variation (CVs) were not exceeding ±15%. The lower limits of quantification (LLOQ) for plasma and tissue were 1 ng/mL. The validated method was successfully applied to characterize the pharmacokinetics and tissue distribution of PFOA, PFOS and PFHxS in rat after a single oral and/or IV administration.

Biography

Hea-Young Cho is an Associate Professor of College of Pharmacy at CHA University. She received her PhD degrees in Biopharmaceutical Science from Chonnam National University. She had been serving as a postdoctoral fellow at the State University of New York at Buffalo, and Deputy Director of Clinical Trials Management Division at Korea Food & Drug Administration (KFDA). Her research interest involves investigations in PK/PD modeling and ADMET. She is currently an Associate Editor of *The Journal of Pharmaceutical Investigation* and a Scientific Chair of The Korean Society for Pharmaceutical Sciences and Technology.

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