

Toxicity Prevention, Therapeutic Drug Monitoring, and Spheres of Influence

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Highlights from the current issue of the Journal of Drug Metabolism & Toxicology feature a novel protective method against airborne infectious diseases, a new method for rapid serum or plasma detection of an anti-fungal agent, and an enhanced technique for early drug metabolism and toxicity screening.

Ogata and colleagues redefine the NOAEL for chlorine dioxide, which may lead to protective use against the pathogenic H5N1 influenza virus. Bigoniya and colleagues report on toxicity studies with pyridostigmine bromide used to combat nerve gas poisonings and potassium iodide used to protect the thyroid from excessive radiation exposure. These data provide new information for safety margin extrapolation to humans.

Tang describes a method for rapid therapeutic drug monitoring of variconazole, a second-generation triazole anti-fungal agent. The

method uses HPLC with UV detection and requires as little as 0.1 ml serum or plasma from adults, and is applicable to 25 µl samples from pediatric patients.

Takahashi and colleagues describe a method for early determination of the metabolic properties of drug candidates using 3D hepatocyte spheroids formed on nanopillar sheets. Using expression levels of CYP450 enzymes, UDP-glucuronosyltransferase, and transporter genes, the authors show the platform has a higher ability of metabolism and excretion than standard methods such as 2D tissue in monolayer cultures. This new platform may offer an enhanced technique for early decision making in drug discovery and development.

These highlighted articles provide a welcome addition to the science of drug metabolism and toxicology.

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