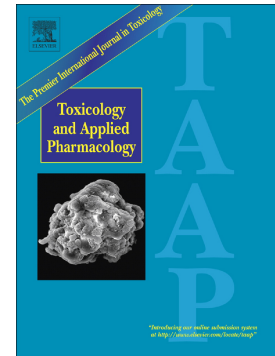


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Effect of Dose and Exposure Protocol on the Toxicokinetics and First-Pass Elimination of Trichloroethylene and 1,1,1-Trichloroethane

Tanzir Mortuza, Srinivasa Muralidhara, Catherine A. White, Brian S. Cummings, Carey Hines and James V. Bruckner

Department of Pharmaceutical and Biomedical Sciences, College of Pharmacy, University of Georgia, Athens, GA 30602-2354

Correspondence to: James V. Bruckner, Ph.D.

Dept. Pharmaceutical & Biomedical Sciences

College of Pharmacy

University of Georgia

Athens, GA 30602-2354

bruckner@uga.edu

ABSTRACT

Trichloroethylene (TCE) and 1,1,1-trichloroethane (TRI) are frequent contaminants of drinking water and of groundwater at hazardous waste sites. There is relatively little information on the target organ deposition of TRI, despite its ingestion and common occurrence in humans. An important aim of the study was to delineate and contrast the toxicokinetics (TK) and bioavailability (F) of TRI and its well metabolized congener, TCE. Blood profiles were obtained from male Sprague-Dawley rats given aqueous emulsions of 6 or 48 mg TRI/kg and 10 or 50 mg TCE/kg as an oral bolus (po) or by gastric infusion (gi) over 2 h. TCE exhibited nonlinear TK, with a disproportionate increase in AUC and decrease in clearance and F with increase in dose. TRI exhibited linear TK. F did not vary significantly with TRI dose or dosage regimen. F values were substantially higher for TRI than for the respective TCE groups. TRI was distributed widely to tissues of rats gavaged with 6 mg TRI/kg, with accumulation in fat. This experiment yielded tissue uptake and elimination profiles and in vivo tissue: blood partition coefficients

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