

OBSERVATION OF STEADY STATE IN BLOOD AND URINE FOLLOWING HUMAN INGESTION OF HEXAVALENT CHROMIUM IN DRINKING WATER

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The uptake and elimination of Cr(VI) in a male volunteer who ingested 2 L/d of water containing 2 mg/L for 17 consecutive days was measured. Total chromium was measured in urine, plasma, and red blood cells (RBCs) for 4 d prior to and 2 wk after dosing (34 d total). The estimated bioavailability (2%) and the plasma elimination half-life (36 h) were consistent with our previous studies of Cr(VI) ingestion in humans. Steady-state chromium concentrations in urine and blood were achieved after 7 d of Cr(VI) ingestion. Both plasma and red blood cell (RBC) chromium concentrations returned rapidly to background levels within a few days after cessation of dosing. Since the concentration of chromium in the RBC should not decrease quickly if the chromium had entered the RBC as Cr(VI), these data support our prior work suggesting that concentrations of 10 mg Cr(VI)/L or less in drinking water of exposed humans appears to be completely reduced to Cr(III) prior to systemic distribution. Clinical chemistry data indicate that no toxicity occurred.

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