

Detoxification/toxification of cadmium in scorpionfish (*Scorpaena guttata*): Acute Expose

David A. Brown, Steven M. Bay, Jennifer F. Alfafara, G. Patrick Hershelman, and Karen D. Rosenthal

¹*Southern California Coastal Water Research Project, Long Beach, CA*

ABSTRACT

Scorpionfish were exposed to sea water (control), sea water dosed with 25 mg Cd/l (0.4 96-h LC₅₀), and 50 mg Cd/l (0.8 96-h LC₅₀) as CdCl₂ for 96 h. These fish were then analyzed to determine the effects of near-lethal Cd exposure on mechanisms of detoxification by metallothionein and the potential for toxification of enzymes in several tissues. In scorpionfish exposed to 50 mg Cd/l, the highest concentrations of metallothionein pool Cd occurred in liver (532 ± 68 umol/wet kg; mean ± SD; n=3). Followed by intestine (151 ± 55 umol/wet kg), gills (27.1 ± 9.6 umol/wet kg) and the kidney (26.8 ± 6.1 umol/wet kg). In these same fish, the highest concentration of enzyme pool Cd occurred in kidney (65 ± 41 umol/wet kg), followed by gills (33.4 ± 2.2 umol/wet kg), intestine (21 ± 12 umol/wet kg) and then liver (3.9 ± 1.5 umol/wet kg). Based upon this partitioning of Cd, the order of sensitivity of tissues, at near-lethal Cd concentrations, would appear to be kidney > gills > intestine > liver.

Key words: detoxification; toxification; cadmium; metallothionein

Due to distribution restrictions, the full-text version of this article is available by request only.

Please contact pubrequest@sccwrp.org to request a copy