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Detection of Dioxin-Like Compound Contamination in Bohai Bay, China by Use of the Transgenic Zebra Fish Model

Wu Dong*, Wenjing Dong, Feng Wang, Mingliang Fang, Jie Wu, Shuiaiyu Wang, Ming Li, Jingfeng Yang, Jingli Mu, Melissa Chernick, David Hinton, De-Sheng Pei, Hongxing Chen and **Lingtian Xie**
Inner Mongolia Key Laboratory for Toxicants Analysis and Toxicology, College of Animal Science and Technology, Inner Mongolia University for the Nationalities, China

Polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs) have been detected in Bohai Bay, near Beijing in northern China. We used zebra fish (*Danio rerio*) as an aquatic fish model to detect dioxin-like compound contamination of the coast of northern China. Zebra fish embryos were exposed to either sediment extract or 1 ppb 2,3,7,8-tetrachlorodibenzodioxin (TCDD) from 4 hpf to 72 hpf. During their development, we evaluated morphological changes including pericardial edema, length of lower jaw and blood circulation in the tail. Following exposure, antibody staining was used to localize CYP1A mRNA expression. When exposed to sediment extract from either location, embryos developed severe pericardial edema, changes in the lower jaw and hemostasis in the tail; additionally, there was significant induction of CYP1A in the liver. Embryos exposed to TCDD showed similar changes, suggesting that these locations may be contaminated by dioxin-like compounds. We found the *in vivo* zebra fish embryo model to be good for this type of environment contamination analysis. In the future, we will collect and chemically characterize water samples from river, sediment and pollution discharge sites.

Keywords: Dioxin-like contamination; Zebra fish embryo assay, Bioassessment; CYP1A