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Identification of apoptosis-related genes Bcl2 and Bax from yellow catfish *Pelteobagrus fulvidraco* and their transcriptional responses to waterborne and dietborne zinc exposure

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Abstract:

Apoptosis plays a key role in the physiology of multicellular organisms, and has been well studied in mammals, but not in teleosts. Zinc (Zn) has been shown to be an important regulator of apoptosis and apoptosis involves in the regulation of lipid metabolism. Moreover, our recent study indicated that waterborne and dietborne Zn exposure differently influenced lipid metabolism in *Pelteobagrus fulvidraco*, but further mechanism remained unknown. The hypothesis of the present study is that apoptosis mediated the Zn-induced changes of lipid metabolism of *P. fulvidraco* subjected to different exposure pathways. To this end, we cloned full-length cDNA sequences of Bcl2 and three Bax subtypes involved in apoptosis in *P. fulvidraco*, explored their mRNA expressions in responses to different Zn exposure pathways. Bcl2 and three Bax subtypes shared similar domain structure as typical pro- and anti-apoptotic Bcl2 family members. Their mRNAs were widely expressed among various tissues, but at variable levels. Waterborne Zn exposure down-regulated mRNA levels of Baxg and ratios of Baxa/Bcl2, and Baxg/Bcl2, but showed no