



## **Mitigation of nitrite toxicity by increased salinity is associated with multiple physiological responses: a case study using an economically important model species, the juvenile obscure puffer (*Takifugu obscurus*)**

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Nitrite is a common pollutant in water and is highly toxic to aquatic animals. To reveal the mechanism of salinity in attenuating nitrite toxicity to fish, we measured the physiological responses of juvenile *Takifugu obscurus* exposed to nitrite concentrations (0, 10, 20, 50, and 100 mg/L) under different salinity levels (0, 10, and 20 ppt) for 96 h. Salinity increased the survival rates of juvenile *T. obscurus* exposed to nitrite. Changes in key hematological parameters, antioxidant system, malondialdehyde, Na<sup>+</sup>/K<sup>+</sup>-ATPase, and HSP70 indicated that nitrite induced considerable damage to juveniles; salinity mitigated the harmful effects. This finding reflects similar changing trends in both antioxidants and their gene expressions among different tissues. We applied an overall index, an integrated biomarker response (IBR), that increased under high-nitrite condition but recovered to the normal levels under salinity treatment. Analysis of the selected detection indices and IBR values showed that the overall mitigating effect of salinity on nitrite toxicity seems to be at sub-cellular level and associated with complicated physiological responses.