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PS-12 Expression of tyrosine hydroxylase and monoamine oxidase in the brain of threespot wrasse reared under different hydraulic pressure

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Dopamine (DA) acts as a neurotransmitter and neurohormone in the brain and has important function in behavior, locomotor activity, cognition and emotional states. Tyrosine hydroxylase (TH) and monoamine oxidase (MAO) are the rate-limiting enzymes that play a role in the biosynthesis and degradation of DA. DA is known to participate in regulation of ovulation and spermiation of various teleosts. However, it is unclear how TH and MAO involve in regulating their reproductive activity. The threespot wrasse *Haricoides trimaculatus* is a daily spawner and spawns around the morning high tide during the spawning season. To know the involvement of DA and the rate-limiting enzymes in tide-related spawning rhythm, we cloned the TH and MAO genes and analyzed their expression levels in the fish reared under different hydraulic pressure by quantitative real-time PCR assay. TH expression in the brain decreased when the fish were reared at the surface of a tank (0-m in depth) for 6 hrs. Rearing the fish at the bottom of the tank (3-m in depth) resulted in high expression of this enzyme gene in the brain. Similarly, MAO expression slightly decreased in the brain of the fish at 3-m rather than 0-m depth. This results support the previous findings that DA content decreased in the brain of threespot wrasse which were kept under 3-m depth. It is concluded that DA metabolism in the brain is influenced by hydraulic pressure (maybe tidal stimuli) and partially participates in spawning rhythmicity with tidal change.