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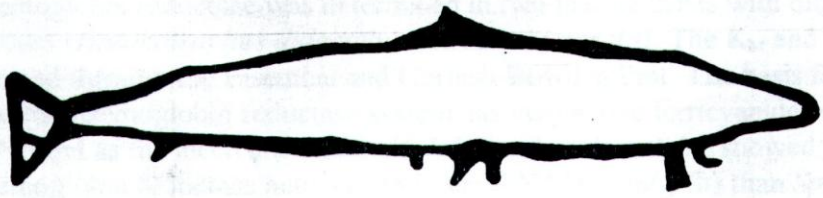

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The activity of methaemoglobin reductase in toadfish (*Halobatrachus didactylus*) and gilt head sea bream (*Sparus aurata*)

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The erythrocytes intracellular oxidative stress oxidizes the haemoglobin forming methaemoglobin, which is nonfunctional. To oppose this formation fishes have an enzyme that reverses the process called methaemoglobin reductase. *In vitro* activity of the methaemoglobin reductase was determined in two marine fishes with different habitats and behaviours (*Halobatrachus didactylus* and *Sparus aurata*). The K_M and V_{max} were determined through the Eisenthal and Cornish-Bowden Plot. The basis for this study is that the methaemoglobin reductase system has very active ferricyanide reductase activity, using NADH as the electrons donor. *Halobatrachus didactylus* showed higher values of methaemoglobin reductase activity (38.9 mmol NAD^+/min/gHb) than *Sparus aurata* (27.8 mmol NAD^+/min/gHb). The reductase of *Halobatrachus didactylus* had, for both substrates, higher values of K_M (potassium ferricyanide: 0.133 mM; NADH: 0.067 mM) and lower values of V_{max} (potassium ferricyanide: 0.097 min^{-1}; NADH: 0.025 min^{-1}), than *Sparus aurata* (potassium ferricyanide: K_M=0.092 mM, V_{max}=0.176 min^{-1}; NADH: K_M=0.032 mM, V_{max}=0.062 min^{-1}). The results indicated that *Halobatrachus didactylus*'s methaemoglobin reductase had high antioxidant efficiency, although that one of the *Sparus aurata* had more sensitivity to the presence of low concentrations of methaemoglobin. The meaning of this different behaviour, at the moment can not be envisaged.

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