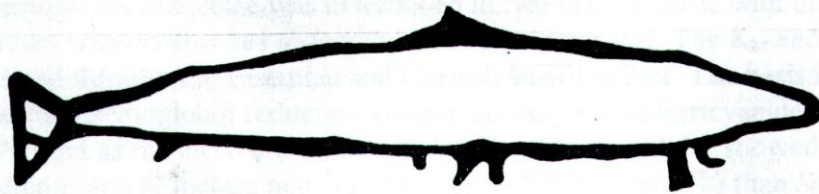


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## The activity of methaemoglobin reductase in toadfish (*Halobatrachus didactylus*) and gilt head sea bream (*Sparus aurata*)

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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<sup>+</sup>/min/gHb) than *Sparus aurata* (27.8 mmol NAD<sup>+</sup>/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<sup>-1</sup>; NADH: 0.025 min<sup>-1</sup>), than *Sparus aurata* (potassium ferricyanide:  $K_M=0.092$  mM,  $V_{max}=0.176$  min<sup>-1</sup>; NADH:  $K_M=0.032$  mM,  $V_{max}=0.062$  min<sup>-1</sup>). 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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