

LOST IN MIGRATION : COULD MERCURY NEUROTOXICITY JEOPARDIZE EUROPEAN EEL TRANSATLANTIC JOURNEY?

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The causes of the dramatic collapse of European eel (*Anguilla anguilla* L.) population since the 80's remain mysterious. Among explanations, contamination by high levels of persistent organic compounds and trace elements during the years they spend in European rivers has often been suggested as playing an important role. It has been demonstrated that contaminants accumulated in fat tissues are released during their 6000-km migration to the Sargasso Sea, causing the release of stored lipophilic contaminants into the general circulation and interfering with eel physiology, energy metabolism and reproduction. These contaminants, relatively inert in fat deposits, may then exert their toxic effects on organs.

In this work, we investigate the possible involvement of mercury neurotoxicity which could affect the migratory and reproductive behavior of eels during their transatlantic journey. Combining analysis of the brain content in Hg species, *in vitro* exposure of eel brain slices, experimental *in vivo* contamination of eels and investigation of the susceptibility of thiol-based antioxidant enzymes to organic and inorganic Hg, we analyzed the potential impact of Hg on eel brain.

We conclude that Hg levels in eel brain could most probably not be sufficient for inducing neurotoxicity even when MeHg stored in muscle and liver could be released into the general circulation, possibly increasing brain levels.

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