

Accumulation and distribution of Mercury in *Solea vulgaris* and *Lepidorhombus boscii* of the Northern Tyrrhenian Sea

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The northern Tyrrhenian sea is affected by the geological anomaly of Monte Amiata, resulting in the presence of Hg in the superficial marine sediments along the coast (1).

Hg concentrations of marine organisms in this area are generally high (2), and in specimens of *Citharus linguatula* the methylmercury content was 2-16 times higher than the maximum limit of 0.2 ug.g⁻¹ w.w. indicated for the edible parts of fish by the EEC directives (3). Recently it was found that *Solea vulgaris* has lower Hg contents than other flat fish studied (4). The difference in Hg concentration between *S. vulgaris* and *Lepidorhombus boscii* was attributed to the different feeding behavior (5).

Hg concentrations were determined in muscle, liver and stomach contents of specimens of *S. vulgaris* and *L. boscii* collected in the northern Tyrrhenian sea in spring 1986. Analyses were performed with flameless atomic absorption spectrometry on samples digested with nitric acid in a pressurized digestion system (6).

Hg content in muscle of *L. boscii* is higher than in *S. vulgaris* (Fig. 1a) and increases with length in both organisms. As regards liver, the metal content is higher in *L. boscii* and increases with length, while in *S. vulgaris* it remains almost constant (Fig. 1b).

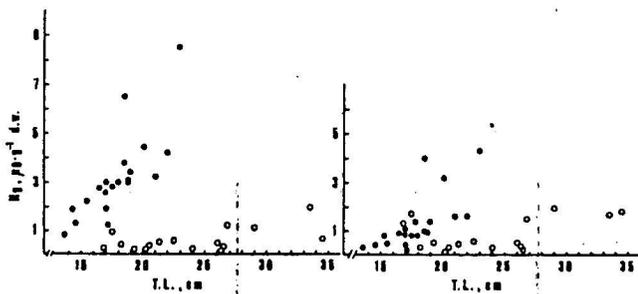


Fig. 1 - Hg concentration in muscle (a) and in liver (b) of *L. boscii* (●) and *S. vulgaris* (○) versus total length (T.L.) of the organisms.

In *L. boscii*, the percentage Hg liver/Hg muscle is in the range of 20 to 70 and increases slowly versus Hg content in muscle tissue (Fig. 2a). In *S. vulgaris* the range is 40 to 600, and the values are less homogeneous, especially at lower Hg concentrations.

Furthermore, in *L. boscii* the Hg Concentration Factor (CF) of muscle with respect to the stomach content is 22.7, higher than that of liver (9.3). On the contrary, in *S. vulgaris* the CF of muscle is lower (9.6) than in liver (13.9).

These results show that in *S. vulgaris* liver accumulates Hg more than muscle does, while for *L. boscii* it is the opposite. This cannot be attributed to the different percentage of lipids observed in the liver of the studied organisms, since the percentage of fat in *S. vulgaris* is 27.5 d.w. as compared with the 61 % in *L. boscii*, while the percentage of fat in muscle is equal in the two organisms (less than 3).

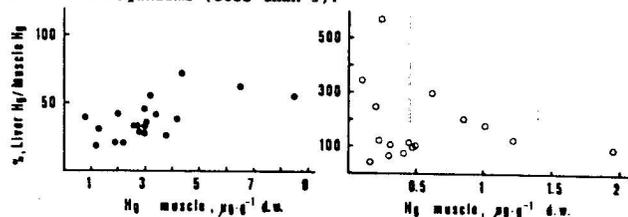


Fig. 2 - Ratio expressed in % between liver Hg and muscle Hg versus muscle Hg concentration, for *L. boscii* (a) and *S. vulgaris* (b).

We can conclude that the different Hg content in muscle of *L. boscii* and *S. vulgaris* can be attributed not only to the different feeding behavior as previously demonstrated (5), but also to the different physiology of the two species.

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REFERENCES

- Baldi, F. & Bargagli, R. (1982). Mar. Environ. Res. 6, 69-82.
- Bargagli, R., Barghigiani, C., Gioffre', D., Pellegrini, D. & Torti, M. (1986). Proc. 30th Congress of I.C.S.M., 1986, Palma de Majorca, 30, 2.
- Barghigiani, C., Pellegrini, D., Gioffre', D., De Ranieri, S. & Bargagli, R. (1986). Mar. Poll. Bull., 17, 424-427.
- Barghigiani, C., Pellegrini, D., Gioffre', D. & De Ranieri, S. (1986). Nova Thalassia, (in press).
- Pellegrini, D. & Barghigiani, C. (1988). Mar. Poll. Bull. (in press).
- Stoeppler, M. & Beckhaus, F. (1978). Fresenius Z. Anal. Chem. 291, 116-120.

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Petroleum hydrocarbons in sea water, marine organisms and sediments from Northeastern Mediterranean and Aegean Sea

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ABSTRACT

Northeastern Mediterranean (Northern Levantine) with a surface area of 1.1×10^6 km² was monitored for DDPH seasonally from November 1986 till December 1987. On the other hand in the Aegean Sea, seasonal monitoring was carried out during 1987 in the regions close to the Anatolian Peninsula. The DDPH concentrations varied from 0.1 to 6.9 µg/l for the Mediterranean and from 0.1 to 12.5 µg/l for the Aegean. High concentrations were found in the Bay of Iskenderun in the N.Eastern Mediterranean and Izmir Bay in the Aegean. *Mullus barbatus*, caught in the Aegean Sea in December 1987, were analyzed for their PAH content and the concentrations ranged between 0.92 and 3.30 µg/g dry wt. Composite *Mytilus galloprovincialis* samples from the Izmir Bay, as expected, showed considerably high PAH levels than *Mullus barbatus*, i.e. PAH levels varied in between 10.78 and 13.30 µg/g dry wt. In the northeastern Mediterranean, *Mugil auratus* species caught in December 1987 from the Mersin Harbour (a heavily polluted area) were also analyzed for their PAH and found to range from 9.98 to 14.48 µg/g dry wt. A composite sample of a bivalve (*Venerupis tabes decussata* surviving in the Mersin Bay showed up to 41.41 µg/g of PAH in terms of dry wt. PAH concentrations in the coastal shelf sediments of the N.Mediterranean was found to range from 0.01 to 0.55 ng/kg and in the Aegean Sea from 0.081 to 1.10 ng/kg on dry wt basis.

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