

HEAVY METAL LEVELS IN SHARKS OF THE MEDITERRANEAN SEA

INTRODUCTION

In the Mediterranean Sea we find different types of highly persistent pollutants, among them heavy metals. Among these, mercury (Hg) stands out as one of the most toxic to organisms. Hg goes through a process of bioamplification and ends up accumulating in long-lived predatory species, such as sharks, some of which are edible.

The **AIM** of this project is to identify the level of Hg in different regions of the Mediterranean Sea that subsequently enters the elasmobranch organisms and to announce the concentration of Hg that can be found in some of the shark species that are consumed.

MATERIALS AND METHODS

The typology of this project is a bibliographic research, therefore, all the information extracted for the realization of this is external. Resources such as articles (46) or scientific books (3) were used, but also different official web pages to achieve the aforementioned objective.

RESULTS AND DISCUSSION

Table 1. Total mercury (T - Hg) concentrations (mg/kg w.w.) in muscle tissue of sharks from different regions of the Mediterranean Sea (Kousteni et al. 2006; Storelli et al. 2002).

SPECIES	LOCATION	T - Hg
<i>Galeus melastomus</i>	Adriatic Sea (Italy)	0.68 - 5.03 2.66 ± 1.24
<i>Galeus melastomus</i>	Adriatic Sea (Albania)	0.25 - 2.06 1.01 ± 0.62
<i>Galeus melastomus</i>	Ionian Sea	0.25 - 2.84 0.82 ± 0.62
<i>Galeus melastomus</i>	Aegean Sea	0.85 - 5.47 2.14 ± 1.44
<i>Scyliorhinus canicula</i>	Adriatic Sea (Italy)	0.79 - 2.56 1.49 ± 0.61
<i>Centrophorus granulosus</i>	Adriatic Sea (Albania)	8.75 - 10.51 9.66 ± 0.69
<i>Squalus blainvillei</i>	Adriatic Sea (Albania)	3.90 - 7.44 4.53 ± 1.19
<i>Etmopterus spinax</i>	Ionian Sea	0.17 - 1.07 0.63 ± 0.29
<i>Heptranchias perlo</i>	Ionian Sea	1.13 - 1.41 1.27 ± 0.1
<i>Mustelus mustelus</i>	Adriatic Sea (Italy)	0.23 - 0.37 0.31 ± 0.06
<i>Mustelus mustelus</i>	Aegean Sea (Island of Crete)	0.22 - 1.83 0.39 ± 0.37
<i>Squalus acanthias</i>	Aegean Sea (Island of Crete)	0 - 5.79 2.07 ± 1.17
<i>Sphyrna zygaena</i>	Ionian Sea	*18.29 ± 0.03

*mean of 3 replicate samples

RESULTS AND DISCUSSION

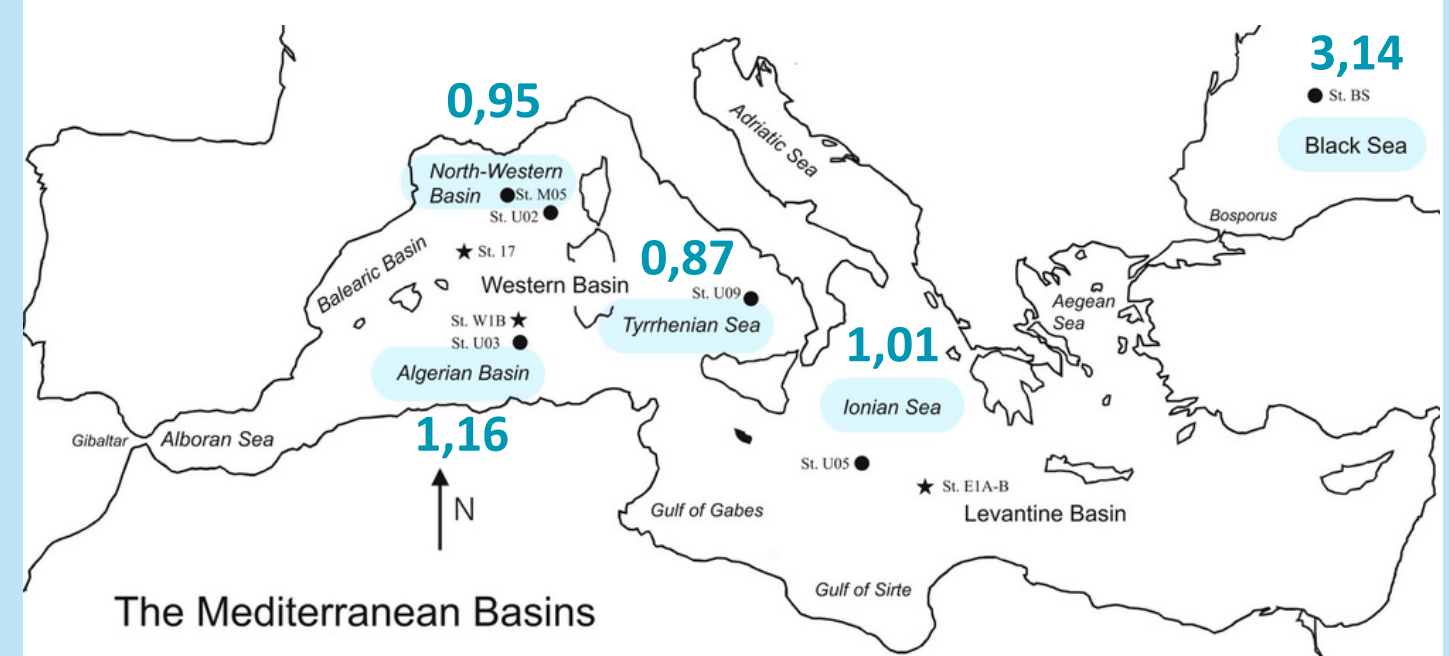


Figure 1. The Mediterranean Basins. Average concentration of Hg (pM) in surface and bottom waters in different regions of the Mediterranean Sea (Cossa & Coquery 2005).

Hg has been detected in the muscle of many elasmobranch species, some of which are important for human consumption. High mercury in Mediterranean biota could be explained by higher methylation of Hg in these waters due to high water temperature.

In most cases the concentration of Hg in surface waters was around 1 pM and, as the depth increased, the concentration did not exceed 2 pM, with the exception of the Black Sea (Fig. 1).

CONCLUSIONS

- In the Mediterranean Sea there is a higher level of mercury than in other areas.
- Mercury accumulates especially in long-lived predatory species, because this heavy metal goes through a process of bioamplification.
- Although sharks are not usually a popular source of fish for human consumption, several species of sharks are eaten, so there are also public health concerns about chemical contamination of elasmobranch tissues.

REFERENCES

- Cossa, D., & Coquery, M. (2005). The Mediterranean Sea, 177-208.
 Kousteni, V., Megalofonou, P., Dassenakis, M., & Stathopoulou, E. (2006). Cybium, 30(4), 102-108.
 Storelli, M. M., Giacomini-Stuffler, R., & Marcotrigiano, G. (2002). Bulletin of Environmental Contamination and Toxicology, 68, 201-210.