

# HG, AS, CD, AND PB IN DIFFERENT TISSUES OF *MURAENA HELENA* FROM ADRIATIC SEA NEAR DUBROVNIK, CROATIA

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## Abstract

This research examines the level of metals in various tissues of wild caught *Muraena Helena* from Adriatic sea in the year 2010 by the atomic absorption spectrometry (Perkin-Elmer Analyst 600 Zeeman equipped with a THGA-600 graphite furnace). The analysis shows that Hg and As had highest levels in muscle, gills and especially liver while Pb and Cd had highest levels in skin.

**Keywords:** Bio-accumulation, Fishes, Metals, South Adriatic Sea

**Introduction:** the trophic level of Moray eels makes them a model organism for the local studies of bioaccumulation or biomagnifications of metals [1].

**Material and Methods:** morays (N=18) were caught in East Adriatic near Dubrovnik (in 2010). Bioaccumulation of Pb, Cd, As and Hg in various tissues were analyzed by the atomic absorption spectrometry (Perkin-Elmer Analyst 600 Zeeman equipped with THGA-600 graphite furnace) [2].

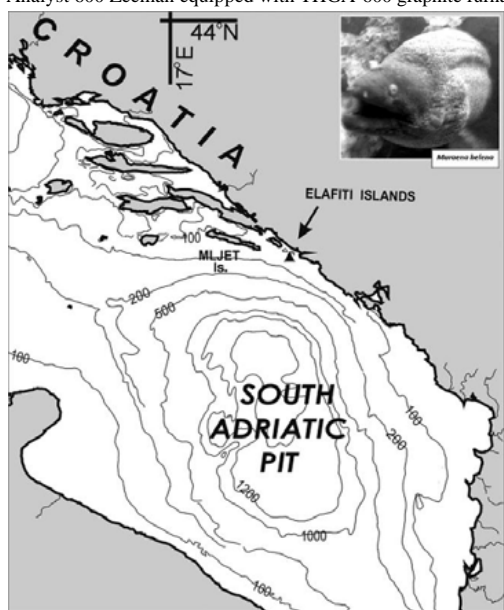


Fig. 1. The sampling location in eastern Adriatic.

**Results:** all analyzed metals (Table 1) were present in skin, bone, muscle, liver, gills and heart and results were expressed per kg of wet weight (ww). Liver was the tissue with highest and heart with lowest levels of bioaccumulated metals. Hg and As had highest levels in muscle, while Pb was highest in the liver and with Cd had highest levels in skin.

**Discussion and Conclusion:** in analyzed morays, liver was the organ with highest bioaccumulation potential as similar in other marine fish of similar trophic status and kin eel species. Interestingly, bioaccumulation of As was highest in gills of moray eels although it is known that As accumulation potential in fish muscle tissue is greater than liver [3]. Regardless of the detection and presence of analyzed metals none of them were above allowed safe levels [4]. The levels of detected metals were lower than previously measured in other species from different locations in Adriatic sea.

Tab. 1. Different bioaccumulation of nonessential metals in tissues of Mediterranean spotted moray (N=18).

	ng kg <sup>-1</sup> ww	mean	median	min	max
skin	Pb	100,8	70,0	10,0	380,0
	Cd	130,5	10,0	3,0	1560,0
	As	58,8	30,0	10,0	150,0
	Hg	28,9	10,0	3,0	106,0
muscle	Pb	37,3	20,0	10,0	144,0
	Cd	9,9	3,0	2,0	40,0
	As	80,6	35,0	10,0	250,0
	Hg	162,2	115,0	50,0	640,0
bone	Pb	56,4	35,0	10,0	261,0
	Cd	99,6	20,0	3,0	730,0
	As	67,0	40,0	10,0	200,0
	Hg	169,9	70,0	20,0	800,0
gills	Pb	62,3	50,0	10,0	205,0
	Cd	33,0	10,6	4,0	150,0
	As	136,3	20,0	10,0	1540,0
	Hg	82,1	60,0	10,0	235,0
liver	Pb	160,6	83,0	30,0	800,0
	Cd	287,2	180,0	30,0	2060,0
	As	193,1	75,0	10,0	1150,0
	Hg	436,9	390,0	90,0	990,0
heart	Pb	112,9	50,0	30,0	350,0
	Cd	17,9	20,0	7,0	40,0
	As	84,3	60,0	10,0	200,0
	Hg	67,1	60,0	30,0	120,0

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