Trace elements in fin whales off Western Iceland

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Introduction:

Heavy metals, widely amplified by human activity, can produce toxic effects on organisms when they reach high concentrations. In this study, we investigated whether concentrations of the various elements varied with time (1986 vs 2009-2015) in the muscle of fin whales (*Balaenoptera physalus*) from Iceland.

Material and Methods

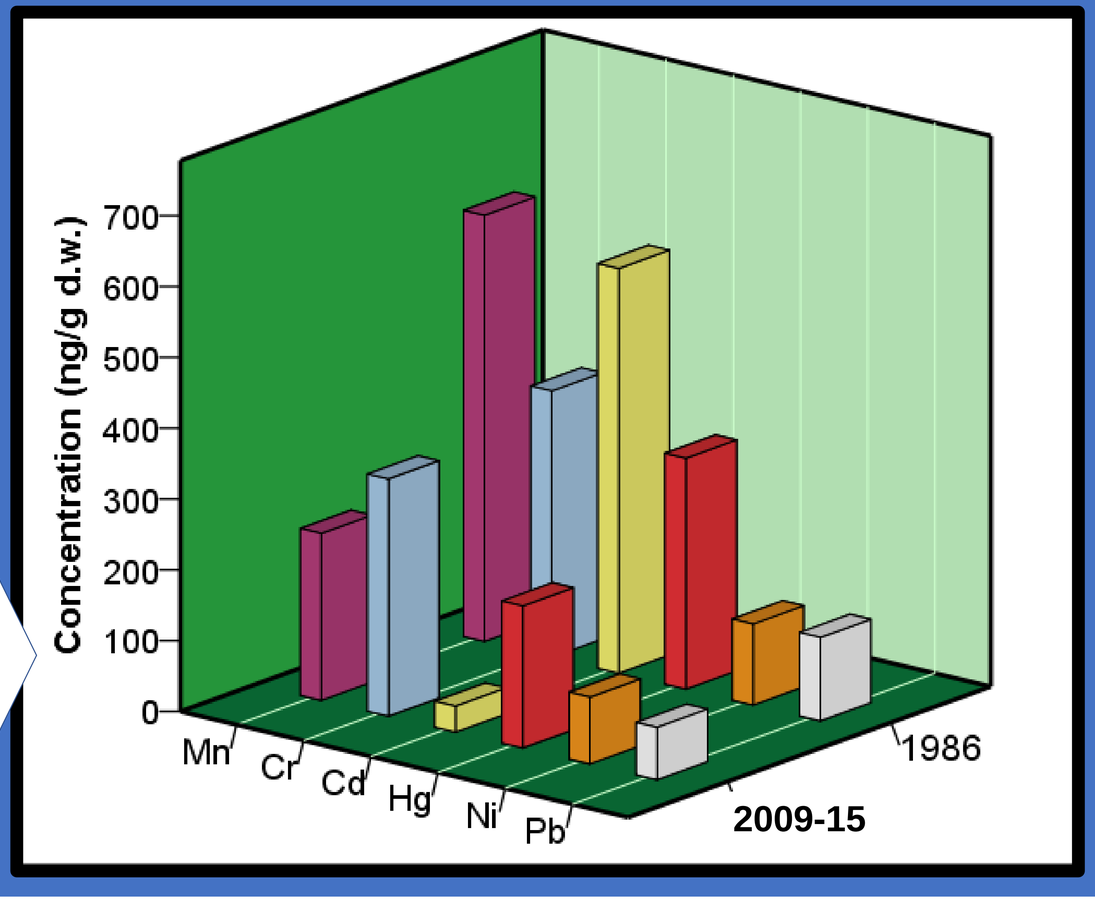
By means of ICP-MS/ICP-OES (Borrell et al, 2015) we analyzed Cu, Cr, Ni, Pb, Cd, Se, Mn, Fe, Zn and Hg in the muscle of 97 fin whales caught off western Iceland in the 1986, 2009, 2010, 2013, 2014 and 2015 whaling seasons.

Results and Discussion:

Most heavy metals concentrations from 1986 were significantly higher than those from 2009-2015 (Table) . Cd was the element that showed the greatest drop, reducing by more than 90% compared to the first period.

Cd, Pb and Hg are heavy metals that, due to their toxicity, have seen their use increasingly regulated. Their reduction in the whale tissues (90%, 50% and 36% respectively) reflects a decrease in the anthropogenic use of these metals along the North Atlantic basin (Figure). On the contrary, Fe and Cr, which have not been regulated, did not vary its concentrations between the two periods.

ng/g dw (*p<0.05)	1986 (n=14)		2009-2015 (n=83)	
	Mean	***S.D.***	**Mean**	***S.D.***
Fe	209,335	*58,838*	203,533	*62,214*
Zn*	251,198	*127,101*	52,219	*13,568*
Cu*	2,998	*1,023*	1,630	*323*
Se*	1,752	*277*	955	*185*
Mn*	602	*203*	237	*66*
Cr	376	*60*	335	*42*
Cd*	572	*586*	37	*26*
Hg*	326	*97*	201	*71*
Ni*	114	*22*	94	*46*
Pb*	118	*56*	74	*53*



Borrell, A., et al. "Use of epidermis for the monitoring of tissular trace elements in Mediterranean striped dolphins (Stenella coeruleoalba)." *Chemosphere* 122 (2015): 288-294.

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