DDT AND PCB IN BLUBBER OF KILLER WHALE, *Orcinus orca,* AND MARINE TUCUXI DOLPHIN, *Sotalia fluviatilis*, FROM RIO DE JANEIRO STATE, BRAZIL - PRELIMINARY RESULTS.

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Introduction

Persistent Organic chemicals have been dumped in the environment for decades and some of these compounds, as organochlorines, have a high bioacumulation potencial and biomagnify along trophic web[1]. Cetaceans are top marine predators, long lived, have large lipid reserves in proportion to their body size and are therefore ideal repositories for high concentrations of lipophilic chlorinated hydrocarbons[2]. This way, they can integrate both temporal and spatial variations in environmental contamination[3].

However, few studies have been conducted about cetacean contamination in South America[4]. Brazil is one of the most industrialised countries in this area and presents some very high polluted environments. The Guanabara bay, located in Rio de Janeiro state, is a dramatic example. This bay is surrounded by a metropolitan complex with more than 11 millions inhabitants, bordered by 6,000 industries, with more than 6,000 additional industries in the drainage basin [5].

Some species of cetaceans inhabitat Rio de Janeiro State, as the killer whale, *Orcinus* orca, and the marine ecotype of tucuxi dolphin, *Sotalia fluviatilis*. Killer whale occurs in Rio de Janeiro coast along the whole year [6]. Tucuxi dolphin occurs in estuarine areas, bays and inlets and have high residence patterns along the south and southeastern Brazilian coast, as the Guanabara bay [7,8].

This study presents the preliminary results of an investigation for the concentrations of organochlorines in blubber of two cetacean's species.

Material and Methods

The blubber samples of one marine tucuxi and one killer whale were collected of specimens incidentally captured in fishing operations and stranded on Rio de Janeiro State, respectively.

The samples were excised from the region posterior to the dorsal fin. After dissection, all samples were wrapped in aluminum foil and preserved at - 20ºC, until the moment of the analysis [9].

About 1,0 g of blubber samples were homogenized with anhydrous Na_2SO_4 and extracted by continuous Soxhlet apparatus, using a modified hot soxhlet for 6 hours with a mixture of hexane:dichloromethane (1:1). An aliquot (1mL) was mixed with sulphuric acid for the clean-up.

After centrifugation and phase separation, an internal standard (octachloronaphtalene) was added for the quantification. The lipid content was measured gravimetrically. A Shimadzu GC-14B with a ^{63}Ni electron capture detector (ECD) was used in the analysis. Organochlorine concentrations are expressed as µg/g wet weight calculated on a lipids basis (µg/g lipid wt.).

Results and Discussion

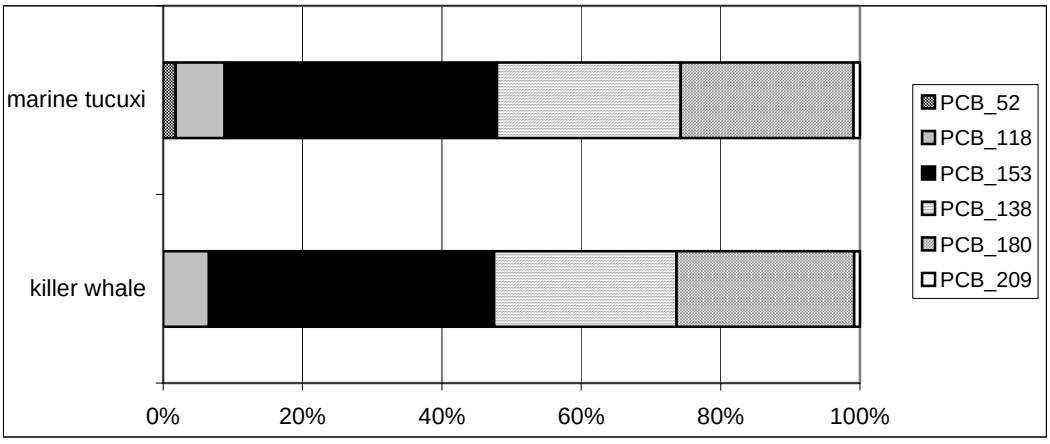
The results are summarised in Table 1. ΣPCBs concentrations were higher than ΣDDT. In general, the organochlorine concentrations were considered as high, when compared to results for other cetacean's populations from Southern hemisphere [2,4].

Table 1. Concentrations of organochlorine in blubber.

Specimen	Total length (cm)	Sex	Lipid content (%)	ΣDDT µg/g lipid wt.	%DDE	ΣPCB µg/g lipid wt.	DDT/PCB
Killer whale	520	F	66.64	174.145	97.72	180.822	0.96
Marine Tucuxi	191	M	66.07	32.268	85.83	64.204	0.50

The PCB with higher concentration in all samples was PCB – 153 (Figure 1). The ΣDDT/PCBs ratio (0.96 and 0.50) indicating high industrial pollution. The %DDE (97.72 and 85.83%) indicates a not recent usage of this pesticide in the region.

Figure 1- Contribution of each PCB congener in ΣPCB.



The differences in organochlorine concentrations observed between killer whale and marine tucuxi are related to their trophic position and the bioavailability. Studies focusing on the flow of organochlorine throughout the cetacean's food chain are essential.

Further studies focusing on organic compounds with larger sample sizes, including other marine tucuxi populations and killer whale, are urgently required for a better understanding of the significance of organochlorine accumulation in this species throughout its life cycle.

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