

Bioaccumulation and trophic transfer of polycyclic aromatic hydrocarbons (PAH) and organochlorine pesticides (OC) in the swamp crocodile (*Crocodylus moreletii*) and its prey in a lagoon system of Emiliano Zapata, Tabasco, Mexico

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Abstract: The present study evaluated the origin and trophic transfer of polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCs) in two trophic chains of the sites of Nuevo Pochote and Emiliano Zapata, Tabasco. These evaluations were based on the predation relationships of 107 organisms representative of both trophic chains, as well as the normalization of lipids to improve the prediction of bioaccumulation of these pollutants. Our results showed that the OCs with the highest presence at both sites were: methoxychlor (508.7 ng/g) > \sum dienes (306.2 ng/g) > \sum DDTs (292.2 ng/g) > \sum HCHs (215.6 ng/g) > \sum endosulfans (88.8 ng/g). As for PAHs, 2- to 4-ring PAHs had the highest presence at both sites: acenaphthene (1,455 ng/g), naphthalene (649.6 ng/g), fluorene (552.9 ng/g) and benzo[a]anthracene (395.7 ng/g). The results also showed that the size and quantity of lipids present in the organisms of the different trophic levels evaluated significantly influenced the bioaccumulation and trophic transfer of these organic pollutants. PAHs and OCs in both study sites presented higher accumulation in sediments, livers and hepatopancreas, and the concentrations of these compounds increased according to the type of feeding of the species in accordance the following classification order: zoobenthivorous > omnivorous > carnivorous. As for PAHs, the predominance of lower molecular weight congeners demonstrated that petroleum and the combustion products of fuel oil were the most predominant in aquatic species and to a lesser extent the pyrogenic sources, whereas the total OCs concentration may be subject to the ingestion of food and the high persistence due to past or current uses in agricultural and public health activities in the region, despite their prohibition and restriction in recent years.

Key words: OCs; PAHs, Bioaccumulation, Trophic levels

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