CADMIUM LEVELS IN LIVER AND KIDNEY OF RAZORILL AND COMMON MURRE AFFECTED BY THE PRESTIGE OIL TANKER SPILL

PERCY RODRIGUEZ, JULIAN ALONSO, M. ANGELES GARCIA, ANA BRAVO, JOSE LUIS CASCALLANA, M. JULIA MELGAR*

Faculty of Veterinary. University of Santiago de Compostela, LUGO, 27002, Spain
mj.melgar@usc.es

The oil spilled by the sinking of the Prestige oil tanker, due to its low quality, contains high levels of heavy metals (Balseiro et al., 2005). This disaster resulted in the deaths of about 300 000 seabirds (SGO, 2005), finding fuel in the digestive system of some of them.

For the purpose of this study we collected 29 razorbills (Alca torda) and 55 commons murres (Uria aalge) between December 2002 and February 2003 from the Recovery Center of Oleiros (A Coruña - NW Spain). In marine birds necropsied, liver and kidney samples were subjected to digestion, in acid medium, into a microwave station and the determination of cadmium concentration was performed by inductively coupled plasma mass spectrometry (ICP-MS). The results, expressed in dry weight, show ranges of cadmium in liver of razorbills and murres ranging from 0.25-2.93 ppm and 0.26 to 52.56 ppm, and the averages were 1.16 ppm and 2.48 ppm, respectively. For the kidney, also in razorbills and murres we establish ranges between 0.43 to 8.59 ppm and 0.61 to 62.30 ppm, with averages of 2.55 and 5.20 ppm, respectively. The analysis of variance shows a statistically significant difference ($p < 0.01$) between the two species, with the highest levels of cadmium in common murres than razorbills in both kidney and liver, those levels were also higher in kidney than in liver. In conclusion, the levels of cadmium detected in both species of birds are very high compared with other studies (Pérez López et al., 2006), this may be due to bioaccumulation of metal in oil spills (Burger et al., 1992).

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[1] Balseiro, A, Espi, A, Marquez, I, Pérez, V, Ferreras, MC, Marin, JF, Prieto, JM, 2005. Pathological features in marine birds affected by the prestige's oil spill in the north of Spain. J Wildl Dis 41, 371-378.
[2] Burger, J, Schreiber, EAE, Gochfeld, M, 1992. Lead, cadmium, selenium and mercury in seabird feathers from the tropical mid-pacific. Environ Tox Chem 11, 815-822.
[3] Pérez López, M, Cid, F, Oropesa, AL, Fidalgo, LE, Lopez Beceiro, A, Soler, F, 2006. Heavy metal and arsenic content in seabirds affected by the Prestige oil spill on the Galician coast (NW Spain). Sci Total Environ 359, 209-220.
[4] SGO 2005. El impacto del "Prestige" sobre las aves marinas de Galicia, tres años después (Sociedade Galega de Ornitoloxía).

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