HEAVY METALS IN WILD BOAR (*SUS SCROFA*) AND RELATED LESIONS

ZACCARONI A.[1], ANDREANI G.[2], ZUCCHINI M.[1], MERENDI F.[1], SIMONI P.[1]

[1] Dipartimento Sanità Pubblica Veterinaria e Patologia Animale, Facoltà Medicina Veterinaria, Università di Bologna
[2] Dipartimento di Biochimica, Sezione di Biochimica Veterinaria, Facoltà di Medicina Veterinaria, Università di Bologna

Heavy metals are toxic elements naturally present in the environment which can be bioconcentrated by plants and animals and incorporated into food cycles. Thus the use of wildlife species as monitors is a useful tool to assess environmental pollution. Because of its ethological characteristics, wild boar is highly probable to be exposed to pollution, mainly by heavy metals. These pollutants, when present at high enough concentrations, can induce histological lesion in various tissues. The purpose of the present work was to investigate the levels of five metals (cadmium, copper, iron, lead and zinc) in wild boar, *Sus scrofa*, originating from an Apennine area of Emilia Romagna, Northern Italy, and to evaluate any possible correlation with histological lesions eventually observed. Samples of several organs (liver, heart, kidney, diaphragm, abductor muscle, masseter, eye, testis, brain, lung and spleen) were collected from hunted animals during winter 2001. Levels of metals were determined on freeze dried tissues employing microwave wet digestion. Toxicological analysis were performed by atomic absorption spectrophotometry and data expressed on a dry weight basis. Histopatological analyses were performed on fixed samples of the same tissue. Highest mean values were found in kidney for cadmium and copper (7 ± 1 ppm and 30 ± 2.6 ppm respectively) and in liver for copper (21.16 ± 3.28 ppm), lead (2139 ± 680.6 ppb), iron (415.92 ± 24.41 ppm) and zinc (94.76 ± 6.11 ppm). In all other tissues, mean concentrations of each metal were at low levels, and were comparable one another. A statistical difference was found for iron ($p<0.05$), copper ($p<0.05$) and cadmium ($p<0.01$) in kidney, in testis ($p<0.01$) for zinc and in liver for copper ($p<0.05$) and cadmium ($p<0.01$) as function of age cohorts. When sex was considered, a statistical difference was found for iron in eye, for copper in heart and for cadmium in heart and kidney. Histopatological analysis allowed to find lesions of different gravity, which anyhow didn't appear so severe to compromise the welfare of the animals. In particular the lungs show episode of chronic interstitial pneumonia; in liver it was constantly observed vacuolar degeneration, mainly perilobular, with frequent focal dissociation of the hepatic laminas. The kidneys show high glomerular cellularity and occa-

sionally growth of the mesangial matrix and, rarely, chronic interstitial nephritis. In all the studied organs congestion was constant. It was not possible to find any correlation between the lesions found and heavy metals' levels. However it is possible to suppose that poor intoxication's facts occurred, anyhow not specific. Starting from obtained data it is possible to define that the exposure to heavy metals in animals from the studied area could be considered very low so that mean concentrations defined for the tissues can be taken as indicative of a "background" contamination.