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Presence of Antibodies Against Aujeszky's Disease Virus in Wild Boar (*Sus scrofa*) in Slovenia

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ABSTRACT: Serum samples from 427 hunter-killed wild boar (*Sus scrofa*) from Slovenia were tested for antibodies to Aujeszky's disease virus (ADV). Samples were collected throughout Slovenia and corresponded to 6.2% of the total harvest. Antibodies against ADV were detected in 111 sera (26%) using a commercial enzyme-linked immunosorbent assay (ELISA). Antibody prevalence increased significantly with age. This report describes the first evidence of ADV infection in wild boar populations in Slovenia.

Key words: Antibodies, Aujeszky's disease, pseudorabies virus, Slovenia, *Sus scrofa*, wild boar.

The wild boar (*Sus scrofa*) is one of the most important big game species in Slovenia, with an annual harvest approximating 6,000 animals per year. The population density of wild boars in Slovenia has increased dramatically during the past decade despite a harvest that has increased by 10% per year.

Aujeszky's disease is an economically important disease of domestic pigs, for which several European countries and the USA have implemented national eradication programs. The causative agent, Aujeszky's disease virus (ADV; *Suid herpesvirus 1*), belongs to the genus *Varicellovirus* in family *Herpesviridae*. Infections in domestic swine can result in fatal encephalitis in newborn pigs, mild or subclinical infections in older animals (Tozzini et al., 1982; Romero et al., 2001), and abortion in pregnant sows (Baskerville, 1981); survivors are latently infected. Feral swine are a recognized reservoir of ADV (Kirkpatrick et al., 1980; Nettles and Erickson, 1984; Van der Leek et al., 1993; Capua et al., 1997; Lipowski, 2003) and thus represent a possible source for infection of domestic swine (Corn et al., 1986; Pirtle et al., 1989; Corn et al., 2004). The importance of this reservoir will increased with the successful eradication of ADV from domestic swine.

Antibodies to ADV and the isolation of this virus have been reported from wild boar in Europe (Cromwijk, 1995; Capua et al., 1997; Albina et al., 2000; Vicente et al., 2002; Zupancic et al., 2002; Lutz et al., 2003), North America (Nettles and Erickson, 1984; Pirtle et al., 1989; Van der Leek et al., 1993; Gresham et al., 2002; Corn et al., 2004), and North Africa (Jridi et al., 1996). This is the first report of antibodies to ADV in wild boar from Slovenia.

Blood samples were collected from 427 hunter-killed wild boar throughout Slovenia during 2003 and 2004. Animals were aged as juveniles (<1 yr) or adults (>1 yr). Blood was collected into sterile tubes and transferred to the laboratory. Serum was separated by centrifugation, and samples were frozen at −20 C until they were tested for antibodies to ADV with a commercial enzyme-linked immunosorbent assay (ELISA) (Svanovir™ PRV-gB-Ab, Svanova Biotech AB, Uppsala, Sweden). Statistical analyses for potential sex and age effects on antibody prevalence were performed by χ^2.

Of 427 serum samples tested by ELISA, 111 (26%) were positive for antibodies to ADV. Antibodies were detected in all age groups and both sexes. Seropositive animals were located in the east, southeast, and northeast of Slovenia (Fig. 1). Antibody prevalence was significantly lower in juveniles (7%) than adults (34%) (χ^2 = 31.33, df = 1, $P<0.0000001$), and these age-class differences were consistent within sexes (juveniles: male 6%, female 9%;

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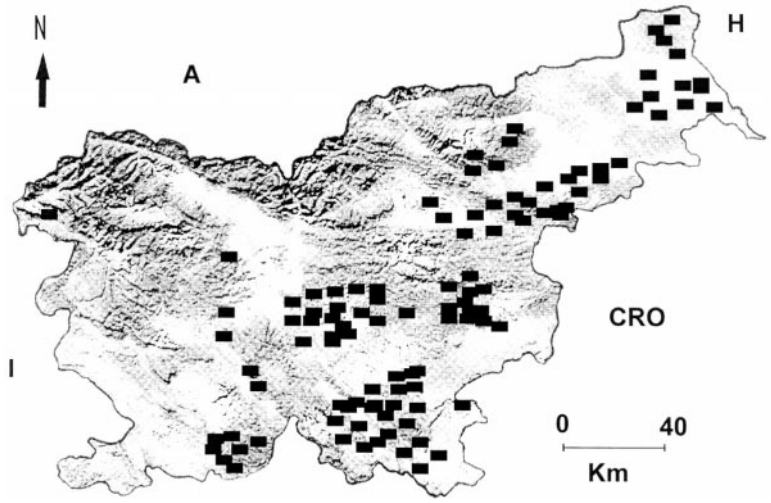


FIGURE 1. Locations (■) of wild boar with antibodies against ADV in Slovenia. I = Italy; A = Austria; H = Hungary; CRO = Croatia.

adults: male 35%, female 32%). Using Bayes' formula (Papoulis, 1984), we can predict with 92% probability that an infected animal belonged to the adult age group. A difference in antibody prevalence was not detected between males (26%) and females (26%) ($\chi^2 = 0.0193$, df = 1, $P = 0.8894$).

Serologic results from the testing of samples collected from hunter-killed wild boar may be influenced by reduced serum quality due to hemolysis and dilution as described by Müller et al. (1998) and Van der Leek et al. (1993). The high prevalence of antibodies to ADV detected in adult animals in this study and the detection of seropositive wild boars throughout their distribution in Slovenia suggest that such potential problems, especially related to sensitivity, are minimal. Our data indicate that the risk of infection increases with age, and this is consistent with results from other studies (Pirtle et al., 1989; Van der Leek et al., 1993; Müller et al., 1998; Lutz et al., 2003). This confirms that surveillance strategies to detect ADV antibodies in wild boar populations should target adult animals. This also suggests that transmission generally occurs in the adult segment of the population.

Detection of antibodies against ADV in wild boar in our study supports the hypothesis that these animals are a reservoir for ADV and that they represent a potential source of infection to domestic pigs. Infected wild boar may also represent a potential source of ADV to other wildlife species, such as wild canids, as well as hunting dogs (Tozzini et al., 1982). Mortality associated with ADV has been documented in endangered species including the Florida panther *(Felis concolor)* in the USA (Glass et al., 1994) and Iberian lynx (*Lynx pardinus*) from Sierra Morena in Spain (Vicente et al., 2002). ADV has also been suggested as a possible contributing factor in a declining number of Eurasian lynx (*Lynx lynx*) in Slovenia. In Slovenia, lynx occupy regions where seropositive wild boar were detected in our study. Understanding potential problems associated with transmission of ADV between species will require further study.

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