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## Serologic survey on some transmissible diseases among wild boars and free ranging pigs in Sardinia

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**SUMMARY** - An organized sampling was established in wild boars and free ranging pigs. The survey regarded infections concerning either economic aspects, e.g., Aujeszky disease, or zoonosis, e.g., Leptospirosis and Brucellosis as well as Trichinellosis, because of its transmissibility through swine, meat and meat products. Up to now, negative results for Trichinellosis were found. Instead, a large spreading of the other pathologies in both domestic and wild swines was observed. For Brucellosis it is important to establish whether the high rate of positive sera is specific for brucella and what biovar is involved. This kind of survey could be very helpful in control programs and pathology prevention.

**Key words:** Swine, wild boar Aujeszky's disease, leptospirosis, brucellosis, trichinellosis.

**RESUME** - "Dépistage sérologique de quelques maladies transmissibles chez les sangliers et les porcs en Sardaigne". Des relevés épidémiologiques ont été effectués chez des populations de sangliers et des porcs en extensif dans des territoires montagneux de la Sardaigne à travers des examens sérologiques. Chez le sanglier en particulier ont été organisés des prélèvements systématiques, basés sur l'intervention directe de vétérinaires chez les compagnies de chasseurs. Le dépistage a regardé des infections d'importance économique pour l'élevage porcin, comme la Maladie d'Aujeszky, ou des zoonoses, comme la Leptospirose et la Brucellose et aussi la Trichinellose pour son importance comme maladie parasitaire transmissible à l'homme à travers la consommation de produits alimentaires porcins. Pour la trichinellose ont été obtenus des résultats négatifs. Une large diffusion a été établie pour les autres infections, mais pour la brucellose il sera important d'établir si le haut pourcentage de positivité relevé est à considérer spécifique, et dans ce cas quel biovar est le responsable.

**Mots-clés** : Porcins, maladie d'Aujeszky, leptospirose, brucellose, trichinellose.

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### Introduction

The internal mountain zones of the Island, most of them in the province of Nuoro, are characterized by a relevant presence of wild breedings of goats, sheep, bovines and swines. The swine population in the provincial territory is of about 65,000 heads, distributed in 6,000 breedings; about the 70% of the heads is bred in extensive or semiextensive way; this allows a promiscuity with the wild boars population estimated in these zones in over 40,000 heads on about 70,000 presences in the entire Island. A large spreading of diffusive pathologies between the two populations, e.g., African Swine Fever and Classical Swine Fever (Firinu and Scarano, 1988), and the possibility of infections, also zoonosis interesting other species occur.

Many of these pathologies, e.g., Aujeszky Disease can reflect on the swine health, others like Leptospirosis, Brucellosis and Trichinellosis on other species human included and therefore consumers.

The main reason to study the diffusion of the Aujeszky disease was derived from the observation of an increasing number of focuses within swine breedings in the last few years.

The study of the role of wild swines and domestic extensive in diffusion of Leptospirosis is particularly interesting, since cases of the disease have been revealed in domestic swines and bovines (Pintore *et al.*, 1993), and moreover for zoonosis nature; in fact from 1982 until 1993 14 human cases were pointed out in the Island.

Brucellosis may be important for swines directly to the species, when *B. suis* is responsible for infection, due to economic losses caused by abortions, or indirectly when biovars typical of other species (*B. melitensis* in small ruminants) are transmitted, particularly when pastures are utilized in promiscuous situations, like in the large territories of the province of Nuoro.

Trichinellosis is a muscular parasitosis transmissible also to humans through the consumption of swine meats; breeding conditions of pigs could play a role as biological step in transmission of parasitosis within the hooded environment (foxes, mice, wild boars) playing a relevant role in preserving parasite; however trichinellosis is not described in humans in Sardinia, perhaps for eating habits like well done preparation of meat and seasoning of meat products, but it is not a full warranty for consumers. Furthermore the habit to eat meat and meat products from homemade slaughtering without veterinary controls compels to determine the presence of trichinella within swines whose products are largely used by local consumers as well as tourist activities. This kind of surveys and the knowledge of negative results could represent a warranty for the healthy origin of products and promote the economic expansion of swine extensive breedings.

In order to revalue a suffering activity which is in a confined situation, also for the presence of ASF and CSF (Firinu and Scarano, 1988), specific interventions for the control of the main pathologies could be performed: the aim of this work is the knowledge of the real situation about the diffusion of the pathologies mentioned above beside CSF and ASF; furthermore the results could offer better sanitary warranties to the consumers.

## Material and methods

### Sampling methodology in wild boars

Sampling was promoted either from veterinarians or through informative campaigns and performed directly from hunters.

This procedure was performed for many years starting in the 1991-92 hunting winter, in the province of Nuoro (Firinu *et al.*, 1994).

### Sampling methodology in domestic swine

During 1994 a special attention was focused on swine breedings in order to determine the serum prevalence of common infections.

A very large sampling was performed using serum obtained by the veterinarians involved since autumn 1993 in the plan of eradication of ASF.

### Laboratory methods

The serological methods are reported in publications indicated in bibliography, when not specified.

## Results

### Aujeszky disease in wild boar

Blood serum from 4,027 wild boars were obtained during 3 hunting seasons and then analysed for the presence of antibodies against the Aujeszky virus. This analysis showed a prevalence of 27.9% with almost no variation among the different hunting campaigns. Most of the samples were collected in the province of Nuoro (3,559) which is the most mountainous area with the highest density of wild population.

These results suggest the possibility that virus is endemic within the wild boars in Sardinia, and that this population might be a virus reservoir for domestic swines as well as for other species susceptible to the infection.

## Aujeszky disease in domestic swine

On 2,379 swine sera belonging to 193 breedings, coming from a homogeneous and mountainous territory of the province of Nuoro (Ogliastra) a serum prevalence of 41.8% was found and a percentage of the 65.8% of the positive breedings was pointed out. These swines were not vaccinated. Also in domestic swines both free ranging and semi-free ranging, the infection had a large diffusion, probably also because they are in contact with wild boars (Oggiano *et al.*, unpublished data). While in intensive breedings diffusion of the virus occurs through aerosol via respiratory system due to the high presence of swines, in extensive breedings venereal transmission of the virus is believed happening.

## Leptospirosis in wild boar

On 2,500 haemosera tested with microagglutination to detect antibodies towards 16 serotypes of *Leptospira* (hardjo; saxkoebing; serjoe; grippotyphosa; bratislava; pomona; proechimys; tropica; mozdok; tarassovi; icterohaemorrhagiae; copenhageni; canicola; ballum; poi; hebdomadis) 9.6% were positive in the province of Nuoro, 1.89% in the province of Oristano and 2.04% for Cagliari; meanwhile the serotype distribution was: pomona and proechimys prevalently in the province of Nuoro, bratislava in Oristano and Sassari. The infection therefore was present as a marked territorial differentiation (Ponti *et al.*, 1994).

## Leptospirosis in domestic swine

Up to now a total of 633 extensive swines from 44 breedings in Ogliastra (Baunei, Talana, Urzulei) were examined: 17.5% of serum prevalence was found, referable to the pomona serotype. This serotype seems to be responsible for the infection among swines in extensive environment and also in wild population in Sardinia.

## Brucellosis in wild boar

On 1933 tested haemosera in 2 year hunting a global serum prevalence of 1.5% was found; particularly 1.26% in the province of Sassari, 1.09% in the Oristano province, and about 2% for the province of Nuoro (Ponti *et al.*, 1994). The serum prevalence respected a defined territory and was higher in the internal zones.

## Brucellosis in domestic swine

On 4,825 swines belonging to 420 wild and semiwild breedings a global serum prevalence of 3.67% and a percentage 13.1 of positive breedings were found, while in the territory of Ogliastra a prevalence of 9% and 59.5% of positive breedings were found (unpublished data). The survey, performed at this time in the territories of the province of Nuoro, confirms that among pigs the territorial peculiarity found in wild boars and particularly the prevalence rate seems to be directly proportional to the promiscuous degree among swines.

It will be necessary to examine deeply the surveys, particularly to isolate and type brucella, to evaluate at last which brucella biovar is related to the serum prevalence.

## Trichinellosis in wild boar and domestic swine

The analysis was performed by an ELISA competition test on 3,117 swines from 207 extensive breedings in Ogliastra and 178 wild boars obtained from wild boars hunted in the same area. The analysis showed negative results indicating that in Sardinia, trichinellosis is not present in the common breedings. However in order to exclude completely this infection it will be necessary to screen more animals as well as perform the analysis looking at the presence of the pathogen on swine muscles, to offer complete sanitary warranties to consumers.

## Conclusions

Trichinellosis does not seem to be present among wild swines and extensive domestic swines of the Island: if these data were confirmed by following researches performed on a large territory to detect the etiological agent, sanitary warranties will be offered to consumers of swine meat. The infectious diseases seem to have a remarkable diffusion tendency in extensive environment, e.g., Aujeszky Disease considered, up to now, more diffusive in the intensive breedings.

Diffusion of Leptospirosis imposes a large monitoring and further direct etiological surveys, for prevention programs concerning the health of the operators in swine sector in the countryside.

The seropositivity for *Brucella* spp. points out the requirement of cognitive surveys: in fact it is very important to know if the seropositivity is specific or it is a crossreaction, and moreover obtain the isolation and typing of the etiological agent related to specific syndromes.

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