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Keratinophilic Fungi from Coats of Wild Boars in Italy

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ABSTRACT: Hair samples were collected from wild boars (*Sus scrofa*) in Italy to determine the presence of keratinophilic fungi. Eleven (5%) of 211 boars had fungi: two (1%) had *Trichophyton mentagrophytes*, five (2%) had *T. terrestre*, two (1%) had *Chrysosporium keratinophilum*, one (0.5%) had *Chrysosporium tropicum*, and one (0.5%) had both *C. keratinophilum* and *T. terrestre*. These are the first recorded isolations of *C. keratinophilum*, *C. tropicum*, and *T. terrestre* from wild boars. Based on the low prevalence of keratinophilic fungi, wild boars probably are not of special epizootological interest for dermatophytic infections.

Key words: Wild boars, dermatophytes, keratinophilic fungi, *Sus scrofa*.

The coats of non-domestic as well as of domestic animals can harbor dermatophytic species. Small (Chabasse et al., 1987; Mancianti et al., 1993) and large wild mammals (McKeever et al., 1958) may carry keratinophilic fungi involved in the etiology of ringworm. Only two published studies are known to us on keratinophilic fungi of wild boars (*Sus scrofa*). *Trichophyton mentagrophytes* was found in one of 31 wild pigs from Rumania (Alteras et al., 1966). Vanbreuseghem and De Vroey (1980) reported the isolation of *Anixiopsis stercoraria* from skin lesions of a captive wild boar in the zoological garden of Antwerp, Belgium. *Microsporum nanum* (Ginther et al., 1964), *T. mentagrophytes, Trichophyton rubrum, Trichophyton tonsurans* (Arora et al., 1979), *Trichophyton verrucosum* (Stenwig, 1985a) and *Microsporum canis* (Stenwig, 1985b) have been described from domestic suids.

Our objective was to determine the prevalence of keratinophilic fungi on hair samples taken from free-ranging wild boars collected in the Liguria region of Italy. The survey included only animals killed by hunters in the Argentina Valley (43°52′N, 8°01′E), a mountain area of the Imperia province, during two hunting seasons from October to December 1994 and then from October to December 1995. The subjects weighed 35 to 80 kg and most were 1 to 4 yr old based on dentition (Marsan et al., 1990). Since the soil was full of stones, they were not dragged over ground for removing but raised immediately after killing, placed askew on two logs and carried by hands to the plain, where they were examined within 1 to 2 hr from death by the hair-brush technique of McKenzie (1963). Hair samples were collected from 211 animals, 118 males and 93 females, by brushing their heads and trunks. None of the animals had clinical signs of ringworm infection and only one had clinical evidence for mange; this was diagnosed by a scraping. The specimens, cultured onto Mycobiotic agar (Difco, Chicago, Illinois, USA) plates, were incubated at 25 C for approximately 30 days and examined daily for mycotic growth after day 10. Isolates were subcultured on Sabouraud dextrose agar (Difco) and were identified based on their macroscopic and microscopical features, following the keys of Rebell and Taplin (1979). Identification of the genera of environmental contaminants, when present, was based on the descriptions reported by Rippon (1988).

Dermatophytes were isolated from 11 (5%) of the 211 specimens. *Trichophyton mentagrophytes* was observed in two (1%) samples, *T. terrestre* in five (2%), *Chrysosporium keratinophilum* in two (1%), *Chrysosporium tropicum* in one (<1%), and both *T. terrestre* and *C. keratinophilum* in one (<1%) sample. Some cultures were positive for environmental contaminants such as *Penicillium* spp., *Aspergillus*

spp., *Cladosporium* spp., *Alternaria* spp. and more rarely for mycelia sterilia (4%).

Finding etiological agents of ringworm in wild animals is of potential public health interest. Hunting seasons for small and large game and numerous outdoor recreational activities may result in a direct and indirect contact between humans and wild animals. The role of infected free-ranging animals in the transmission of dermatophyte infection has been postulated (Mantovani et al., 1982). Therefore, it is conceivable that animals without clinical signs of ringworm, but harboring dermatophytes, could be responsible for zoonotic infections. However, based on our results, the prevalence of dermatophyte infections in wild boars (5%) was lower than 14% from red foxes (*Vulpes vulpes*) (Mancianti et al., 1993) and 85% from small mammals (Chabasse et al., 1987). *Trichophyton mentagrophytes*, an agent of ringworm in animals (Aho, 1980), was isolated from only 1% of the wild boars. Gonzalez-Cabo et al. (1987) demonstrated the importance of zoophilic strains of *T. mentagrophytes* in rural areas as recognizable agents of human infection contracted by contact with infected pigs or with material contaminated by them. Two percent of the isolates were *T. terrestre*, a fungus recovered from soil, which is able to infect domestic pets (Scott et al., 1980) and which also has been isolated from human lesions (Rogers et al., 1993). *Chrysosporium keratinophilum* and *C. tropicum* are geophilic species and have not been considered pathogens; however, since they can grow on keratin residues and are related to dermatophytes, it seems important to recognize their potential as pathogens (Chabasse et al., 1987). To our knowledge, this is the first recorded isolation of the soil saprophytes, *T. terrestre*, *C. keratinophilum* and *C. tropicum* from wild boars. It is noteworthy that none of the animals from which dermatophytes were isolated had any lesions. Therefore, it is possible that the coat of the pigs examined during the present study may have been contaminated with spores picked up from the environment and served as carrier of fungus elements.

In conclusion, it is readily apparent that species of keratinophilic fungi occur infrequently on the coat of wild boars, are not associated with lesions, and are quite possible linked to environmental contamination. Therefore, the risk that fungal isolates are zoonotic is weak. While it is possible, this would be a much lower risk than that associated with handling domestic or wild canids and felids.

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