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**Study of endoparasites in the Goats (*Capra hircus*)
of the Island of Montecristo (Italy)**
(Mammalia Artiodactyla Bovidae)

Abstract

The Island of Montecristo is home to one of the few populations of free-ranging goats existing in the Mediterranean. A study of endoparasites was performed on fecal material and demonstrated the presence of coccidia belonging to the genus *Eimeria* as well as larvae of *Protostrongylus rufescens*, a nematode of the respiratory system.

Key words: *Eimeria*, fecal eggs, feral goats, larvae, Mediterranean sea, *Protostrongylus rufescens*.

Riassunto

[*Studio sugli endoparassiti nelle capre (Capra hircus) dell'Isola di Montecristo (Italia)*]

L'Isola di Montecristo ospita una delle poche popolazioni di capre domestiche inselvatichite esistenti nel Mediterraneo. È stato eseguito uno studio sugli endoparassiti presenti nel materiale fecale. Si sono ritrovati coccidi di protozoi del genere *Eimeria* e larve di *Protostrongylus rufescens*, nematode del sistema respiratorio. I risultati dimostrano che nella popolazione di Montecristo è presente un numero inferiore di specie di endoparassiti rispetto a quelle trovate in altre popolazioni di *Capra hircus* allevate in Italia. Questo può essere dovuto a una maggiore immunità acquisita dalla popolazione inselvatichita di Montecristo o alle particolari condizioni ambientali e vegetazionali dell'isola.

In Italy, free-ranging goats (*Capra hircus* Linnaeus, 1758) are only present on the Island of Montecristo, where there is a population of about 200 individuals (5.2 ind./km²) (BOITANI et al., 2003; PUPPO, 2008); other living populations of free-

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ranging goats are only known to exist in the Eastern Mediterranean (i.e. the Islands of Antimilos, Youra and Crete) (see HORWITZ & BAR-GAL, 2006). Few studies have looked at the goats of Montecristo from the point of view of health and the research performed on endoparasites of the abomasum has confirmed infection by the following nematodes: *Haemonchus contortus*, *Nematodirus abnormalis*, *Oesophagostomum venulosum*, *Ostertagia circumcincta*, *Trichostrongylus colubriformis* and *Trichuris ovis* (see GUBERTI et al., 1990; GUBERTI & GIOVANNINI, 1990; BOITANI et al., 2003).

The Island of Montecristo is part of the Tuscan Archipelago (lat. 42°19' N, long. 10°19'E). It has a surface area of 10.4 km², a high level of morphological heterogeneity and a substrate of granitic rocks. There are few springs and in summer the water frequently stagnates. The area has been a Nature Reserve since 1971 and human activity is now limited to conservation and research. The mammals present include *Oryctolagus cuniculus*, *Rattus rattus* and some species of Chiroptera. The most prevalent vegetation consists of shrubs, with *Erica arborea*, *E. scoparia*, *Rosmarinus officinalis* and *Cistus monspeliensis*, alternated with low bushes of *Teucrium marum* and small meadows of annual grasses rich in *Graminaceae* (see also FILIPELLO & SARTORI, 1981). Grazing has a negative effect on the plant species as for regeneration of *Quercus ilex* and *Juniperus phoenicea* (CRUDELE et al., 2005; LANDI et al., 2007).

The samples studied were collected in January 2009 and March 2010 along two paths that follows the altitudinal gradient (from 70 to 370 m a.s.l.). Six collection points were selected along the path and 1-2 samples were collected per site, providing a total of twenty samples. The material was appropriately conserved and refrigerated then analyzed to detect the presence of endoparasites typical of goats.

Of the total number of samples analyzed, an average of 10 fecal eggs/g belonged to the genus *Eimeria*, while 90 fecal eggs/g belonged to *Protostrongylus rufescens*, a nematode of the respiratory system. The presence of coccidia of the genus *Eimeria* is relatively common in goat populations, even in geographically distant areas (RUIZ et al., 2006; FAIZAL & RAJAPAKSE, 2001; DEĞER et al., 2003). Factors such as age, previous contact with parasites, gender, genetic characteristics, environment and management (nutrition status and presence of other parasites) explain why some animals of the same breed are more capable than others of limiting worm populations (TORRES-ACOSTA & HOSTE, 2008).

Overall, a comparison between the endoparasites found in the population of Montecristo goats with those present in other nuclei of goats reared in Italy (see MARTELLA et al., 2003; DI CERBO et al., 2006), reveals that the Montecristo population has a lower number of parasite species. This may be due to a greater immune capacity in the population or the particular environmental and vegetational characteristics of the island.

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