

## Anadolu Yaban Koyununda (*Ovis orientalis anatolica*) Bulunan Parazitler

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**Özet:** Konya'nın 50 km doğusunda yer alan Bozda bölgesinde, koruma altına alınmış olarak yayın 500 civarında Anadolu yaban koyunu bulunmaktadır. Mayıs 1999 tarihinde, ölüm sebebi araştırılmak üzere laboratuvara getirilen bir Anadolu yaban koyununa, ektoparaziter muayeneden sonra otopsi yapılmış ve tüm iç organları parazitler yönünden muayene edilmiştir. Koyunların yayını alanın farklı yerlerinden 20 daki örneği toplanmış ve flotasyon, sedimentasyon ve Baermann Wettzel teknikleri ile parazitolojik muayene yapılmıştır.

Ektoparaziter inceleme sonucu *Rhipicephalus bursa* ve *Rh. turanicus* türü keneler; iç organ muayenesi sonucu ise sestodlardan *Thysaniezia ovilla*, sestod larvalarından *Coenurus cerebralis* ve *Cysticercus taenuicollis*, nematodlardan *Cystocaulus ocreatus*, *Marshallagia marshalli*, *Ostertagia circumcincta*, *O. occidentalis*, *Nematodirus* sp., *Shabertia ovina* olmak üzere 9 helmint türü tespit edilmiştir. İncelenen daki örneklerinde de *Trichostrongylidae* spp., *Nematodirus* spp., *Marshallagia marchalli*, *Trichuris* sp. yumurtaları; *Dictyocaulus filaria* ve *Cystocaulus ocreatus* larvaları; ve *Eimeria* spp. oocistleri tespit edilmiştir. Bu parazitler Türkiye'de Anadolu yaban koyununda ilk defa tespit edilmiştir.

**Anahtar kelimeler:** Anadolu yaban koyunu, *Ovis orientalis anatolica*, parazit

### The Parasites Detected in The Anatolian Wild Sheep (*Ovis orientalis anatolica*)

**Summary:** Anatolian wild sheep live only around Bozda district which is 50 km away from the eastern part of Konya province in the Central Anatolia Region of Turkey. They have been protected by the ministry of forestry. In May 1999, a dead female Anatolian wild sheep was autopsied and examined for parasites. Twenty fresh faecal specimens were also collected on the ground where the sheep was living, and examined for parasite eggs, oocysts and larvas by flotation, sedimentation and Baermann Wettzel techniques.

*Thysaniezia ovilla* from cestodes, *Coenurus cerebralis* and *Cysticercus taenuicollis* from larvae cestode, *Cystocaulus ocreatus*, *Marshallagia marchalli*, *Ostertagia circumcincta*, *O. occidentalis*, *Nematodirus* sp., *Shabertia ovina* from nematodes, *Rhipicephalus bursa* and *Rh. turanicus* in arthropods, were found in the autopsy. *Trichostrongylidae* spp., *Nematodirus* spp., *Marshallagia marchalli*, *Trichuris* sp. eggs; *Dictyocaulus filaria* and *Cystocaulus ocreatus* larvas; and *Eimeria* spp. oocysts were detected in all of faecal samples. These parasites have been determined for the first time in the Anatolian wild sheep in Turkey.

**Key words:** Anatolian wild sheep, *Ovis orientalis anatolica*, parasite

### Introduction

Anatolian wild sheep (*Ovis orientalis anatolica*) live only around Bozda district which is 50 km. away from the eastern part of Konya province in the Central Anatolia Region of Turkey. It was reported that the number of these sheep declined to 35 in 1966. However their number increased to 520 through the protection programs directed by the ministry of forestry (4). The Anatolian wild sheep is considered to be naturally protected against diseases due to their living in wild life.

There are no published reports on if these animals have parasites in Turkey. *Moniezia benedeni*, *Stilesia*

*globipunctata*, *Thysaniezia giardi*, *Protostrongylus muraschkinzewi*, *P. railletii*, *Ostertagia osteragi*, *O. occidentalis*, *O. trifida*, *Marshallagia dentispicularis*, *Nematodirus abnormalis*, *N. archari*, *N. davtiani*, *N. dogieli*, *N. oiratianus*, *Nematodirella longissimespiculata*, *Parabronema skrjabini* and *Gongylonema pulchrum* were found in the autopsy of 8 mountain sheep (*Ovis ammon*) reported by Dobrinin et al (1) in Turkmenia. Kistner et al (6) examined 18 hunted *Ovis canadensis californiana* and found *Protostrongylus stilesi* in the lungs of 3 sheep and *Cooperia oncophora*, *Marchallagia marshalli*, *N. oiratianus*, *Skrjabinema ovis*, *Trichostrongylus axei* and *Trichuris* spp. in the intestines of 11 sheep, and cysticerci of *Taenia hydatigena* and adult *Wyominia tetoni* in the livers of 2 sheep. Eslami et al (2) reported 25 nematodes of which mainly is

*Marchallagia marshalli*, *Ostertagia* spp., and *Skrjabinema ovis* in the wild sheep (*Ovis orientalis*). Knight and Uhazy (7), have reported for the first time the presence of *Trichuris schumakovitschi* in the Canadian wild sheep (*Ovis canadensis canadensis*).

The reason is that this article has been written because any reports describing the parasites of Anatolian wild sheep in Turkey have not been reported.

### Materials and Methods

The material of this study consisted of only one dead Anatolian wild sheep (*Ovis orientalis anatolica*) brought to the University of Selcuk, College of Veterinary Medicine in May 1999 to determine the death reason. Twenty faecal samples were collected on the ground where it lived. It was autopsied, and its skin, intestinal organs, brain and gastro intestinal system were examined for parasites. The parasites were collected in 70% alcohol and the identification of species were made on light microscope. Faecal samples were examined for parasite eggs, oocysts and larves by Fülleborn's saturated salt solution, Benedek sedimentation and Baermann Wettzel techniques.

### Results

The numbers of detected parasites and their locations in the Anatolian wild sheep (*Ovis orientalis anatolica*) were given in Table 1. Postmortem examination revealed 11 parasite species including one cestode, two cestode larvaes, six nematodes and two arthropods.

*Trichostrongylidae* spp., *Nematodirus* spp., *Marchallagia marshalli*, *Trichuris* sp. eggs; *Dictyocaulus filaria* and *Cystocaulus ocreatus* larvas; and *Eimeria* spp. oocysts were found in all faecal samples.

### Discussion

No research has been detected on the reserved Anatolian wild sheep to date. The only report that has come out so far was related to the living and environmental conditions of Anatolian wild sheep reported by Kaya and Aksoylar (5).

Dobrinin et al (1) have found 3 cestodes and 14 nematodes in Turkmenian mountain sheep (*Ovis ammon*). Kistner et al (6) have reported 2 cestodes and 7 nematodes in a hunted *Ovis canadensis californiana*. Knight and Uhazy (7) have reported the presence of *Trichuris schumakovitschi* in the Canadian wild sheep (*Ovis canadensis canadensis*) first time.

In the present study, we found 3 cestodes, 6 nematodes and 2 arthropods in the Anatolian wild sheep. *Trichostrongylidae* spp., *Nematodirus* spp., *Marchallagia marshalli*, *Trichuris* sp. eggs; *Dictyocaulus filaria* and *Cystocaulus ocreatus* larvaes; and *Eimeria* spp. oocysts were found in all stool samples.

*M. benedeni*, *S. globipunctata* and *T. giardi* were found Thecestodes in the Türkmenian mountain sheep (*Ovis ammon*) (1). Kistner et al (6) have found adult *Wyomina tetoni* and cysticerci of *Taenia hydatigena* in the *Ovis canadensis californiana* in Oregon. In this study, we observed one *T. ovilla* in the intestine, one *C. cerebralis* in the brain and five

**Table 1.** Parasites found in the Anatolian wild sheep

Species	location	number
<i>Thysaniezia ovilla</i>	small intestine	1
<i>Coenurus cerebralis</i>	brain	1
<i>Cysticercus tenuicollis</i>	omentum	5
<i>Cystocaulus ocreatus</i>	lungs	7 ♂ 10♀
<i>Marchallagia marshalli</i>	abomasum	51♂ 21♀
<i>Ostertagia circumcincta</i>	abomasum	150♂
<i>O. occidentalis</i>	abomasum	10♂
<i>Nematodirus</i> sp.	small intestine	6♂ 11♀
<i>Chabertia ovina</i>	large intestine	10♂ 18♀
<i>Rhipicephalus bursa</i>	skin	3♂ 4♀
<i>Rhipicephalus turanicus</i>	skin	5♂ 5♀

*C. tenuicollis* in the omentum of the Anatolian wild sheep.

Some studies have reported that nematode parasites of wild sheep are commonly *Ostertagia ostertagi*, *O. occidentalis*, *O. trifida*, *Marchallagia dentispicularis*, *M. marshalli*, *Nematodirus abnormalis*, *N. archari*, *N. davtiani*, *N. dogieli*, *N. oiratianus*, *Nematodirella longissimespiculata*, *Parabronema skrjabini*, *Gongylonema pulchrum*, *Cooperia oncophora*, *Skrjabinema ovis*, *Trichostrongylus axei*, *Trichuris spp.* and *Trichuris schumakovitschi* (1, 6, 7).

Eslami et al (2) has reported 3 nematodes species as *Marchallagia marchalli*, *Ostertagia spp.*, *Skrjabinema ovis*. In our study, the digestive system of the Anatolian wild sheep was examined, and 5 nematode species were found as *Marchallagia marchalli*, *Ostertagia circumcincta*, *O. occidentalis*, *Nematodirus spp.* and *Chabertia ovina*. It was reported that these parasites were also found in domesticated sheep in Konya Province (3).

As a result, a total of 11 adult parasite species as 3 cestodes, 6 nematodes and 2 arthropods were detected in autopsied Anatolian wild sheep. The eggs for 4 nematode species, larvae for 2 nematode species, and oocysts for 1 protozoa were found in the faecal examination. This study is the first report on these parasite species in the Anatolian wild sheep in Turkey. Further studies are needed to determining the parasite fauna of this breed living on the reserved environment.

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