

## Short Communication

### The Prevalence of Helminths in the Alimentary Tract of Geese (*Anser anser domesticus*) in Kars District, Turkey

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#### INTRODUCTION

Rearing geese is of major importance in Kars District of Turkey because geese are not only considered an alternative source of meat but also play an important role in the district's economy. Kars District contains around 6% of Turkey's population of geese (Demirsoy, 1996; Anon., 1999).

As in other animals, parasitic infections have an insidious and symptomless manifestation in geese, whether reared in modern commercial farms or in family-type small-holder farms. Parasitism may result in reductions in meat and egg production and can cause mass mortality when infection is massive (Levine, 1968; Tolgay, 1973; Soulsby, 1986). Most helminths of poultry are not host-specific and can easily be transmitted from other species of poultry to geese or *vice versa* (Hall, 1952; Merdivenci, 1967).

There are no published reports regarding the helminths of geese in Kars, although previous authors have described 33 species that occur in geese, 18 of these in Turkey (Table I). This study was therefore designed to determine the prevalence of helminths located in the alimentary tract of geese in Kars and to identify the species involved.

#### MATERIALS AND METHODS

The alimentary tract (oesophagus–cloaca) of 175 geese from Central Kars and seven other localities in the vicinity of Kars were collected in November 1999 and 2000, when the birds were slaughtered. Samples were transferred to the Laboratory of Parasitology, Faculty of Veterinary Medicine, University of Kafkas, Kars. The faecal samples collected from the cloaca of the geese were examined for the presence of the eggs of

helminths by a centrifugation–flotation technique using a solution of  $ZnCl_2+NaCl$  (specific gravity 1.3). One gram of faeces was taken from the cloaca for this technique. The faeces were mixed in 15 ml of flotation solution, strained and poured into a tube, which was centrifuged at 300g for 3 min. A few drops of fluid were taken with a wire loop (diameter 7 mm) from the top of the tube (diameter 14 mm), placed on a microscope slide and examined microscopically under a  $\times 10$  objective (total magnification  $\times 100$ ). In addition, the proglottides of cestodes were examined macroscopically. Collection of the helminths was carried out by the techniques reported by Merdivenci (1967), Güçlü (1982) and Gıcık and Burgu (2000). Identification of helminths was made as described by Reid (1959), Merdivenci (1967), Levine (1968), Tolgay (1973), Soulsby (1986), Thienpont and colleagues (1986) and Urquhart and colleagues (1987).

## RESULTS

No clinical signs associated with helminthosis were observed before the birds were slaughtered and there were no gross lesions nor any pathological changes in the geese examined.

Of the 175 alimentary tracts examined, 78.9% (138/175) harboured helminths. Twelve species of helminths were identified. These included one trematode, four cestodes and seven nematodes (Table I).

Examination of the faecal samples revealed that 37.1% (65/175) of them were positive for helminths and only four species of helminths were detected in the faeces (*Hymenolepis* spp. 1.1%, *Amidostomum anseris* 4.6%, *Capillaria* spp. 16.6% and *Heterakis dispar* 26.3%).

There were differences in the prevalence of helminth infections in the different localities. There was a very high prevalence in Arpaçay, Sarıkamis, Susuz (100%), Selim (96.7%) and Akyaka (80%), but much lower in Kars Central (32.1%), Kağızman (42.9%) and Digor (57.1%).

The number of species in the alimentary tract of the geese ranged from 1 to 5. The number of helminths found in the alimentary tract of single geese was between 1 and 287. The mean helminth burden was 27.6, in which *Heterakis dispar*, *Capillaria* spp. and *Amidostomum anseris* were dominant.

## DISCUSSION

This was the first study on helminthosis in geese in Kars District, Turkey. Two different figures for the prevalence were obtained, that determined from examining the alimentary tract being higher than that obtained from faecal samples. This difference may be attributed to the frequency of defecation in geese and to the low intensity of infections caused by helminths in the geese examined in this study. In addition, the different prevalence figures may be related to the low fecundity of some helminth species and the insensitivity of faecal examination techniques.

TABLE I  
Helminth species and their proportions determined in this study, and helminth species reported from geese in previous studies in Turkey and various other countries

Helminth species	This study (%)	Turkey <sup>a</sup>	Other countries <sup>b</sup>
<b>Trematoda</b>			
<i>Apatemon gracilis</i>	–	–	+
<i>Cotylurus cornutus</i>	–	–	+
<i>Hypoderaeum conoideum</i>	–	+	+
<i>Notocotylus attenuatus</i>	–	+	+
<i>Echinopariphium recurvatum</i>	–	+	+
<i>Echinostoma revolutum</i>	1.1	+	+
<i>Catatropis verrucosa</i>	–	+	–
<i>Zygotocyle lunata</i>	–	–	+
<b>Cestoda</b>			
<i>Hymenolepis lanceolata</i> (syn., <i>Drepanidotaenia lanceolata</i> )	7.4	+	+
<i>Hymenolepis setigera</i>	1.7	+	–
<i>Hymenolepis</i> sp.	5.1	–	+
<i>Dicranotaenia carunula</i>	–	+	–
<i>Echinocotyle anatina</i>	4.0	+	–
<i>Fimbriaria fasciolaris</i>	–	+	–
<i>Microsomacanthus</i> sp.	–	–	+
<i>Retinometra longicirrosa</i>	–	–	+
<i>Retinometra</i> sp.	–	–	+
<i>Sobolevicanthus microsoma</i>	–	–	+
<i>Sobolevicanthus fragilis</i>	–	–	+
<i>Diorchis stefanskii</i>	–	–	+
<i>Dilepis undula</i>	–	–	+
<b>Nematoda</b>			
<i>Amidostomum anseris</i>	29.7	+	+
<i>Amidostomum spatulatum</i>	–	–	+
<i>Epomidostomum crami</i>	–	–	+
<i>Epomidostomum anatinum</i>	–	+	–
<i>Trichostrongylus tenuis</i>	2.9	+	+
<i>Heterakis dispar</i>	54.9	+	+
<i>Heterakis gallinarum</i>	–	+	+
<i>Ascaridia galli</i>	1.1	+	+
<i>Capillaria anseris</i>	23.4	+	+
<i>Capillaria anatis</i>	–	+	–
<i>Capillaria obsignata</i>	14.9	–	+
<i>Capillaria caudinflata</i>	0.6	–	+

<sup>a</sup>From Kurtpinar and Merdivenci (1956), Merdivenci (1967), Güçlü (1992)

<sup>b</sup>From Barus *et al.* (1997), Purvis *et al.* (1997), Busta (1980), Clinchy and Barker (1994)

The difference in the proportions of helminth infection in the geese from different locations is in agreement with the results of Barus and colleagues (1977), Wojcinski and colleagues (1987) and Clinchy and Barker (1994). These researchers reported that the proportion of helminth infection is high in locations where geese gather in pools of water compared to locations where there is no pool or the geese do not gather in large flocks. This was also the case in our study.

Mortality and clinical signs due to helminth infection are rare unless the helminth burden is heavy. The absence of deaths or clinical signs in the geese in this study is also in accordance with the reports of other researchers (Nowicki *et al.*, 1992; Purvis *et al.*, 1997).

As a high proportion of geese can be infected by helminths and these are then a potential reservoir for other poultry, there is a need for more detailed study to understand the epidemiology of helminthosis in these animals in order to establish effective control and prevention strategies.

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