

Prevalence of Abomasal Nematodes in slaughtered Goats at industrial Urmia slaughterhouse, West Azerbaijan province, Northwest of Iran

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Abstract:

Parasitic infections are generally regarded as the most prevalent and important health problems of grazing ruminants in Iran. Gastro-Intestinal nematode parasite infections are a major constraint to the small ruminants (sheep and goat) industry and cause to reduce weight gains, growth rate, nutrient utilization and less meat, wool and milk production, also increased costs of management, treatment and even mortality in several cases. A study was carried out to estimate the prevalence abomasal nematodes of slaughtered goats at the Industrial Urmia slaughterhouse from March 2012 to March 2013. During the study period, 130 abomasums of goats were examined according to standard procedures. Four genera of nematodes were identified in the goats abomasum with an overall prevalence of 46.14%. The specific prevalence observed was *Ostertagia ostertagi* (12.30%), *Ostertagia circumcincta*. (7.69%), *Haemonchus contortus* (16.92%) and *Marshallagia marshalli* (9.23%). Among the species found *Haemonchus contortus* was the most prevalent and frequent species. No significant correlation was observed between the prevalence of infection with seasons and ages.

Keywords: Abomasal, Nematodes, Goat, Industrial Urmia slaughterhouse, Iran

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Introduction

Parasitic infections are generally regarded as the most prevalent and important health problems of grazing ruminants in Iran, with losses associated with nematodes, and ectoparasites causing a combined annual loss of approximately a billion dollars (McLeod 1995). Gastro-Intestinal nematode parasite infections are a major constraint to the small ruminants (sheep and goat) industry and cause production losses, increased costs of management and treatment and even mortality in several cases. Also, Helminths infections in domestic ruminants are of major importance in many agro-ecological zones in Iran and had the highest index as an animal health constraint to the poor keepers of livestock worldwide through losses due to reduced weight gains and growth rate, reduced nutrient utilization, less meat, wool and milk production (Central Statistics Authority, 2004). Gastro-Intestinal nematodes are recognized as a major constraint to both small and large-scale small ruminant production in developing countries, leading to significant economic losses (Fritsche, 1993). Abomasum is one of the most important sites for living bursate nematodes. It is the site location for 3 pathogen species of GI nematodes e.g., *Haemonchus spp* (barber's pole worm), *Ostertagia spp*, *Teladorsagia spp* and *Trichostrongylus spp* (black scour worm). Worms of lesser or occasional importance include *Nematodirus spp*, *Oesophagostomum spp* and *Chabertia ovina* (Garedaghi et al., 2013).

In several researches many differences have been represented in the prevalence and intensity of small ruminant's GI Nematodes, according to different climatic condition (Skerman et al., 1967; Uriarte et al., 2003; Tariq et al., 2008; El-Azazy, 1995). Fifty two million sheep are scattered in different regions of Iran, (Kamalzadeh et al., 2008), where climatologically it is divided into 4 regions (Skerman et al., 1967). The majorities of sheep population in Iran are grazing in the pasture and are in permanent contact with pasture harboring 3rd stage larvae (L3) of GI nematodes (Garedaghi et al., 2013). In a comprehensive study in 2 zones (Zone 1 and 2), which carried out by Skerman et al. (1967), epidemiology, seasonal incidence and economic importance of gastrointestinal nematodes of small ruminants of Iran were studied. Since, in several studies, no attention has been paid to the effects of climatic conditions of different zones on the epidemiology of GI nematodes.

Materials and Methods

This study was conducted on slaughtered goats at the industrial Urmia slaughterhouse from March 2012 to March 2013. A total of 130 goat's abomasums were examined and used to estimate prevalence, identify species and monthly worm burden of abomasal parasites. All the slaughtered animals were male (male animals selected) and their age ranges from 1 to 5 years old. The abomasum was removed from the abdominal cavity and the contents of each abomasums were washed under running water using a 100 mesh sieve and the present nematodes were counted and preserved in 70% ethanol containing 5% glycerin.

Because the intensities of nematode infections were low, all of nematodes were subjected to microscopical examination and identified according to morphological characteristics described by Skrjabin and Shikhobalova (1954).

Prevalence of parasite species was calculated as the number of individuals of a host species infected with a particular parasite species/number of hosts examined. Chi-square test with SPSS software (version 17) was used to analyze the effect of region, season and age of the host on the level of parasitism. ANOVA test was used to show the correlation between mean worm burden, season and age of the host. In all the analyses, $p < 0.05$ was for significance.

Results

As a result four species of nematodes were found in examined abomasums. The overall prevalence was 46.14% (60/130) that from total of 130 samples, 26 (19.99%) cases relevant to *Ostertagia spp* that 16(12.30%) cases related to *Ostertagia ostertagi* and 10 (7.69%) cases to *Ostertagia circumcincta*, 22 (16.92%) cases related to *Haemonchus contortus* and 12 (9.23%) cases of 130 samples relevant to *Marshallagia marshalli*. The total prevalence of abomasal nematode infection in Urmia slaughterhouse has been shown in Table 1.

Table 1: The total prevalence of abomasal nematode infection in industrial Urmia slaughterhouse, West Azarbaijan province, Northwest of Iran

Parasite	Prevalence %	No. Infected	Mean number of worms per infected abomasum	Range of infection	
				Min	Max
<i>Ostertagia ostertagi</i>	12.3	16	570	46	970
<i>Ostertagia circumcincta</i>	7.69	10	85	60	120
<i>Haemonchus contortus</i>	16.92	22	65	65	135
<i>Marshallagia marshalli</i>	9.23	12	115	70	148

Among the species, *Haemonchus contortus* was the most prevalent and frequent species. No significant correlation was observed between the prevalence of infection with the seasons, ages, and sexes.

Discussion and Conclusion

The results of this study indicated that 46.14% of examined animals were infected. The maximum of infection rate was with *H. contortus*, another study in Southern Ethiopia indicated that the infection rate of *Ostertagia spp* and *M. marshalli* in goats were 78% and 61%, respectively (Amenu A., 2005). Moosakhani (2004) reported that infection rates with above nematodes in examined sheep were 5.8% and 47% in Khoy; 44.4% and 33.3% in Urmia; 28.5 and 28.5% in Bukan; 42.8% and 28.5% in Naghadeh, from West-Azerbaijan province, northwest of Iran. Also, infection rates of examined sheep in Tabriz with *O. circumcincta* (32.05%), *O. trifurcate* (4.75%) and *M.marshalli* (28.53%) were reported by Hashemzadeh-Farhang H, and Shahbazi P. (2009). In another investigation by Ranjbar-Bahadori et al. (2007) in Golestan province, North of Iran 4.44% and 2.22% of sheep and 2.22% and 2.22% of goats were infected with *O. circumcincta* and *M. marshalli*, respectively. According to Etminan Rad et al. (2005) studies in Yazd town, the infection rate with *M. marshalli* was 69.6% and Abdolali Chaleh Chaleh et al. (2011) in Kermanshah town, reported that the prevalence rate of GI infection, in sheeps with *M. marshalli*, *O. circumcincta* and *H. contortus* was 46%, 10% and 2%, respectively. According to the results obtained from this study, it is concluded that the results were very close to the results reported by the other researchers.

This shows the more responsiveness of these species to breeding by monitor the trend of infection in the future. The differences in prevalence reported by these studies could be accounted on the basis of differential management practices (Garedaghi et al., 2011).

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