



Detection and Prevalence of Gastrointestinal Helminthes in Samosir Goats on Samosir Island, North Sumatra, Indonesia

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Abstract

The study aimed to describe the gastrointestinal helminthes in samosir goats, Samosir Island, North Sumatra, Indonesia. A total of 50 fecal samples were collected. Fecalalysis was performed using two methods: sedimentation and flotation techniques. Out of the 28 fecal samples examined, 7 were found positive for GIT helminthes infection. The helminthes infection detected were *Haemonchus* sp. The overall prevalence of GI parasitic infection in samosir goats was 25%. This study indicates that GI helminthes were detected as prevalent in samosir goats. The results of this study can serve as basic information about the samosir goat helminthes in Indonesia.

Keywords: samosir goat, gastrointestinal helminthes, prevalence

Introduction

The main principle of disease prevention is to improve the endurance of goats through maximum cleanliness and environmental maintenance. Goats are livestock that is resistant to various diseases. Disease in livestock can cause problems and losses in the form of sudden death, reduce production power, and reduce the quality of meat, milk, and skin. A sick goat can transmit the disease to other healthy animals.

The samosir goat has a dominant white phenotype appearance that is very different from local goats in Indonesia (Doloksaribu M *et al.*, 2006). The bodyweight of the samosir goat is greater when compared to the marica goat, or almost as big as the kacang goat, but the most prominent characteristic is the color of the very dominant white fur (Pamungkas *et al.*, 2009) and is referred to by residents as white goats or batak goats (Doloksaribu M *et al.*, 2006). In general, local goats in

Indonesia are also called kacang goats with various characteristics that vary between regions (Aaron *et al.*, 2006). The number of samosir goats in 2017 on samosir island was 5.526 (BPS, 2018).

Several studies on intestinal parasitic infections in Indonesian local goats are reported that pea goats are thought to be more resistant to gastrointestinal infections compared to costa and gembrong goats (Aaron, 2006). The goats that are slaughtered by RPH Aceh had gastrointestinal nematode helminthes infections such as *Trichostrongylus*, *Oesophagostomum*, *Bunostomum*, *Chabertia* spp., *Trichuris* spp., and *Haemonchus* spp. (Hanafi *et al.*, 2006). In Manokwari Papua, outside Amban Village, West Manokwari Regency, there are *Strongyle* sp., *Strongyloides* sp. infestation, *Haemonchus* spp, *Bunostomum* spp, *Trichostrongilus* spp, and *Cooperia* spp. in the digestive tract of crossbred ettawa goats (Purwaningsih *et al.*, 2017). However, there are no published

research on infection in the digestive tract of samosir goats on Samosir Island, North Sumatra, Indonesia. The purpose of this study was to identify helminthes eggs and the prevalence of intestinal helminthes diseases in samosir goat.

Materials and Methods

Study area

This research was conducted in one districts from various parts in the coastal lake area located in Simanindo District, Samosir District in Samosir Island, Sumatera Province (2021°38' -20 49'48"/ North Latitude; 98°24'00''99°01'48'' East Longitude) (BPS, 2018). Samosir Island is a volcanic island in the middle of Lake Toba in the province of North Sumatra. Samosir Island has an area of 69,280 ha (Siregar, 2008) or around 692 km² surrounded by Lake Toba with a lake surface area of ± 624.80 km² (BPS, 2018). The condition of Samosir Island is surrounded by Lake Toba waters which cover almost 50% of the island's land area and generally have highland hilly land with a dry climate. The height of Samosir Island ranges from 904 to 2157 meters above sea level (BPS, 2018). Samosir Island is included in Samosir District, North Sumatra Province. Rainfall in the Samosir Island region is included in the low category which is an average of 93 mm per month (BPS, 2018).

Methods

A total of 28 fecal samples were randomly collected directly from the rectum of samosir goats during January 2019. The samples were placed in a separate polythene bag, labeled then stored in a container with ice for transportation to the laboratory. The sample was analyzed at the Balai Veteriner Medan, North Sumatra Province Indonesia. The prevalence of the gastrointestinal helminthes infections was expressed in percentage value using the following formula:

$$P = \frac{\text{Positive results: Number of samples}}{100\%} \times 100\%$$

The data obtained will be analyzed descriptively and presented in the form of

the prevalence of gastrointestinal helminthes.

Results

Based on this research, out of fecal samples examined, 7 from 28 fecal samples were found positive of helminthes eggs infected with an overall prevalence of 25% for gastrointestinal helminthes. The All gastrointestinal helminthes infections are from the nematode class *Haemonchus* sp.

Discussion

The prevalence of gastrointestinal helminthes in samosir goats in Simanindo District, Samosir Regency is 25%. This is lower than that reported in etawa crossbreed goats in the Siliragung Sub District, Banyuwangi District (51,9%) (Taufik *et al.*, 2016), Manokwari Barat Sub District, Manokwari District (100%) (Purwaningsih *et al.*, 2017), western zone of Punjab (79,24%) (Sing *et al.*, 2017), in Bangladesh (60%) (Shahiduzzaman *et al.*, 2003), Hilly region of Meghalaya, India (28,65%) (Das *et al.*, 2017), Pegirian Surabaya Slaughter House, East Java (8,33%) (Novia *et al.*, 2019), around Rawalpindi and Islamabad, Pakistan (66,45%) (Gadahi *et al.*, 2009), Ahmednagar district of Maharashtra (62,75%) (Sutar *et al.*, 2010), Northwest Arkansas (100%) (Weingartz. 2017), Mymensingh, Bangladesh (77%) (Islam *et al.*, 2017), commercial goat farms in Central Uganda (43%) (Nsereko *et al.*, 2015), around Jabalpur (72.78%) (Gupta *et al.*, 2016).

Only *Haemonchus* sp. species of GI helminthes were identified in the study area, different from species on the Siliragung District of Banyuwangi District; *Strongyloides* sp. *Haemonchus* spp., *Bunostomum* spp., *Trichostrongilus* spp. and *Cooperia* sp. (Purwaningsih *et al.*, 2017), Banda Aceh Slaughter House, Aceh; *Trichostrongilus* spp, *Oesophagostomum* spp, *Bunostomum* spp., *Chabertia* spp, *Trichuris* spp dan *Haemonchus* spp. (Hanafi *et al.*, 2006). The various species of GI helminthes had already reported by various researchers in different parts of the world. In Bangladesh; *Haemonchus*, *Oesophagostomum*, *Paramphistomum* and *Trichostrongilus*

(Shahiduzzaman *et al.*, 2003), Hilly region of Meghalaya, India; *Haemonchus contortus*, *Oesophagostomum* spp., *Strongyloides* spp., and *Trichostrongylus* spp (Das *et al.*, 2017), Pegirian Surabaya Slaughter House; *Paramphistomum cervi* and *Cotylophoroncotylophorum* (Novia *et al.*, 2019), around Rawalpindi and Islamabad, Pakistan; *Trichuris*, *Haemonchus*, *Coccidia*, *Nematodirus* and *Fasciola* (Gadahi *et al.*, 2009), in Mymensingh, Bangladesh; *Strongyloides* sp., *Haemonchus* sp., *Oesophagostomum* sp., *Trichostrongylus* sp., *Trichuris* sp., *Paraphistomum* spp., *Fasciola* spp., *Eimeria* spp. and *Balantidium* spp. (Islam *et al.*, 2017), in Central Uganda; *Haemonchus* species and *Oesophagostomum* sp (Nsereko *et al.*, 2015) around Jabalpur; *Strongyles*, *Trichuris*, and *Strongyloides*.

All of the samples from samosir goats were found with a single infection of 925%). Single infection also occurs in the western zone of Punjab (19,04%) (Sing *et al.*, 2017) in Banyuwangi 51,9% (Taufik *et al.*, 2016), Pegirian Surabaya Slaughter House, East Java (8,33%) (Novia *et al.*, 2019). Monoinfection of GI nematodes was found too in goats in and around Jabalpur (42.19%).

Samosir goats fecal samples were collected during January 2019 which the highest rainfall for one year in Samosir Island. The prevalence of *Haemonchus* was recorded by 25%. The *Haemonchus* contort infection was recorded peak in the July (84.42%) and lowest in January (46.15%) in slaughtered black bengal goats in Bangladesh (Shahiduzzaman *et al.*, 2003), in and around Rawalpindi and Islamabad Pakistan (64,19%) (Gadahi *et al.*, 2009). At Ahmednagar district of Maharashtra in the rainy season (77.33%) (Sutar *et al.*, 2010). In the winter *Haemonchus* contortus was found in Northwest Arkansas (88%) (Weingartz, 2017), in commercial goat farms at Central Uganda (56%) (Nsereko, 2015), in Central Veterinary hospital Bangladesh (39.81%) (Muhammad *et al.*, 2018). The possibility spread of GI helminthes occurs directly through grass infected by infective larvae. In the rainy season, the spread of disease is very fast because the fluctuations in the number of

nematode eggs in manure tend to be affected by fluctuations in rainfall with the highest point in the rainy season and the lowest in the dry season (Soulsby, 1986).

The difference of prevalence and species of GI helminthes may be due to the pattern of the farm, type of goat, age, different environment, and also feed type. The samosir Goat is thought to be able to adapt well in the natural conditions that tend to be rocky and the hilly topography so that they undergo a selection process and adapt to the environment on Samosir Island to form specific goats. Most goat farmers on Samosir Island are still traditional. They release their goats for a day and will return by themselves to the cage in the afternoon. This system has great potential in goats infested by GI helminthes and to be the only source of transmission comes from infected grass feed which is eaten directly by goats.

GI helminthes infection can cause economic losses which caused livestock growth to be suboptimal (Tiuria, 2004). Goats and sheep are cattle that are easily infested by intestinal helminthes parasites both clinically and subclinically in developing countries (Zeryehun, 2012) because of their habit of grazing. Based on observations in the field, helminthes disease does not directly cause death but causes losses in the form of stunted growth, decreased quality of meat, easily infected with other diseases, reduced quality of skin, and GI tract. GI helminth infections in samosir goats occur due to traditional farm type are free-range grazing system and knowledge of farmers about helminth infections is low. These infections can come from the grass in the pasture and forage especially in the rainy season (Basri, 2012).

Conclusion

The identified GI helminthes of samosir goats is *Haemonchus* sp from GI nematodes. The present study revealed that the prevalence of GI helminthes infections of samosir goats was 25%. Knowledge of these GI helminthes and related epidemiological parameters is important for control strategies for the occurrence of such diseases in samosir goats.

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