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Identification Gastrointestinal Parasites in The Small Intestine, Large Intestine, And Feces of Local Pig from North Sulawesi

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Abstract

The purpose of this study was to identify gastrointestinal parasites in the small intestine, large intestine, and feces of local pigs from North Sulawesi. Sampling in this study was carried out in Termaal Village, Likupang Barat District, North Minahasa Regency and in Poopoh Village, Tombariri District, Minahasa Regency. Observations and identification of parasites were carried out at the Biology Laboratory of the Faculty of Mathematics and Natural Sciences, UNIMA. Samples of small intestine fluid, large intestine, and pig feces were taken totaling 9 samples. The sample was examined by the Floating Test method, and if parasites were identified, a literature study was carried out with reference to several sources and previous research books to determine the type of parasite species found. The results of this study indicate that all samples observed and identified were positive for the presence of intestinal parasitic worms. The parasitic worms found were *Ascaris lumbricoides, Strongyloides ransomi, Trichuris suis, Taenia solium, and Fasciolopsis buski.*

Key words: *Parasites, Gastrointestinal, Local Pig, North Sulawesi*.

INTRODUCTION

The local pig is a type of pig that has been kept by the community for generations with a traditional rearing system. Local pigs have a high adaptability to the surrounding environment. Besides being easy to care for, when compared to pork from thebreeds Landrace, Duroc, and otherlocal pork also has a more savory meat taste. Local pigs are developed with the aim of making profits from selling seeds, tillers, and meat then preserving family traditions and participating in national food supply and good nutrition to produce healthy, strong, and intelligent generations (Sihombing, 2006).

North Sulawesi is one of the areas in Indonesia where most of the socio-cultural conditions of the people can accept the presence of pigs. Certain areas in North Sulawesi, such as north Minahasa, Bolaang mongondow, and Talaud still have local pig populations native to North Sulawesi itself. In these areas, pigs are generally still kept in the traditional way, which is free to roam from morning to evening and return to the cage at night. Feed is given from family food scraps and tubers in inadequate quantities

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with insignificant sanitation conditions. Conditions such as this can cause pigs to become susceptible to disease, one of which is the easy transmission of parasites starting from one animal and then to the next.

Parasitic infection is a common disease in animals including wildlife. The occurrence of parasitic infections in animals is often caused by a lack of livestock sanitation or cage maintenance. Diseases caused by parasites basically infect young livestock where the maintenance conditions are still not perfect, such as livestock not being kept in cages, rarely being cleaned, and constantly being reared in waterlogged soil. What really determines the positive or negative effect on the relationship between the host and the disease-transmitting agent is the environment, because if the surrounding environment is rather humid, the rate of infection contamination in livestock is very high. Parasites will contaminate the body of livestock through the food consumed and will then develop in the digestive tract, then excreted in the form of feces (Widnyana, 2013).

Parasites that are in the digestive tract of pigs can cause appetite and growth disorders. Impaired growth will last a long time so that it can result in production. Transmission of the parasite can occur through drinking water, feed, contaminated nipples and unclean drum conditions. Clinical symptoms of pigs infected with the parasite are hair loss, weakness, diarrhea, anemia, and over time they become thin and can even cause death (Guna dkk., 2014).

Before the occurrence of infection caused by parasitic worms in pigs that can cause losses to farmers, various prevention efforts must be carried out, namely by observing the fluid in the small intestine, large intestine, and pig feces. The aim is to see if the pig is infected with a parasitic infection, the presence of worm eggs in the pig can be used as a clue to identify the types of parasites in the pig's digestive tract. Therefore, it is necessary to conduct a study on the identification of digestive tract parasites in the small intestine, large intestine, and feces of local pigs from North Sulawesi.

MATERIALS AND METHODS

This research was conducted from September to November 2021, the research location was in Termaal Village, West Likupang District, North Minahasa Regency and in Poopoh Village, Tombariri District, Minahasa Regency. Furthermore, observations and identification of parasites were carried out in the Biology laboratory of FMIPA UNIMA. The tools that will be used in this study are: coolbox, 50 ml bottle, permanent marker, label, 500 ml beaker glass, scalpel, filter, dropper, microscope, 100 ml measuring cup, handscoon, mask, cover glass, object glass, analytical balances, test tubes, tube racks, lab coats, cameras. The materials used in this study were: pork feces, small intestine fluid, large intestine fluid, cooling gel, Nacl, and 70% alcohol.

Examination of the small intestine and large intestine is to remove the small intestine and large intestine from the abdomen then tie it to the intestinal border on both sides, then slice the intestine that has been previously tied using a scalpel, then scrape the intestines and collect it in a bottle filled with 70 % alcohol. To find out the types of worms in the intestines, note whether there are adult worms in the intestinal cavity and filtered using a sieve, the collected worms are then observed and identified using a

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microscope. After being identified, a literature study was carried out with reference to several sources and previous research books.

Stool examination in this study was using the floating method, weighed 2 grams of stool sample then added 30 ml of NaCl and stirred until homogeneous. Next, do the filtering to separate the waste feces, then the filter water is put into the test tube until it is full or convex, that is, it is flush with the surface of the tube. Next, paste the cover glass on the convex surface and leave it for 2-3 minutes then lift the cover glass and place it on the object glass and examine it under a microscope with 100x magnification (Soulsby, 1982). After identifying the presence of parasites, a literature study was carried out with reference to several sources and previous research books.

RESULTS AND DISCUSSION

The results of observations at the Biology Laboratory of Fmipa Unima on 3 samples of local pigs from North Sulawesi obtained, namely two samples from Termaal Village, West Likupang District and 1 sample from Poopoh Village, Tombariri District, showed that parasitic worm eggs were found in the small intestine, large intestine, and feces class nematodes, cestodes, and trematodes. Observation results can be seen in the table below:

Table 1. Sample data containing parasitic worm eggs in the small intestine

Code sample	Species	Class
Sample 1 small intestine	*Taenia solium*	Cestode
Sample 2 small intestine	*Strongyloides ransomi*	Nematode
Sample 3 small intestine	*Ascaris lumbricoides*	Nematode

Table 2. Sample data containing parasitic worm eggs in the large intestine

Code sample	Species	Class
Sample 1 large intestine	*Ascaris lumbricoides*	Nematode
Sample 2 large intestine	*Taenia solium*	Cestode
Sample 3 large intestine	*Taenia solium*	Cestode

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Table 3. Sample data containing parasitic worm eggs in feces

Code sampel	Species	Class
Sample 1 Feces	*Fasciolopsis buski*	Trematode
Sample 2 Feces	*Taenia solium*	Cestode
Sample 3 Feces	*Trichuris suis*	Nematode

In addition, the results of interviews and direct observations in the field regarding body weight, age, type of feed, and lifestyle of each sample are presented in the table below:

Table 4. Results of interviews and observations in the field

Code sample and Location	Body weight	Age	Type of feed	Lifestyle
Sample 1, Termaal Village	18 Kg	11 month	Cassava, Papaya, and leftovers/family consumption	Caged and often bathed every afternoon.
Sample 2, Termaal Village	15 Kg	6 month	Coconut dregs, bran, papaya, natural foods, leftovers for family consumption.	They are kept in the afternoon until late at night but are often allowed to roam freely from morning to evening.
Sample 3, Poopoh Village	17 Kg	6 month	Bran, Corn Granules, Pork Pur, leftover food/family consumption.	Caged and often bathed every afternoon.

Gastrointestinal parasitic worms found on examination of samples of the small intestine, large intestine, and feces of local North Sulawesi pigs under a microscope, from a total of 9 samples all were positive for infection with digestive tract parasitic worms, the results of the examination can be seen in tables 1, 2, and 3 above . There were 3 species of worms from the nematode class that were found, namely *Ascaris lumbricoides*, *Strongyloides ransomi*, and *Trichuris suis*. In the Cestode class, only 1 species was found, namely *Taenia solium*, and from the Trematode class, 1 species was also found, namely *Fasciolopsis buski*.

Worm eggs were *Ascaris lumbricoides* found in 3 samples of the small intestine and in sample 1 of the large intestine, eggs of *Strongyloides ransomi* were found in 2 samples of the small intestine, eggs ofworms were *Trichuris suis* found in 3 samples of feces,worm eggs were *Taenia solium* found in sample 1 of the small intestine, sample 2 and 3 large intestines, and samples of 2 feces, eggs of the worm *Fasciolopsis buski* were found in sample 1 of feces.

Worm eggs were *Ascaris lumbricoides* found in samples of 3 small intestines and in samples of 1 large intestine. *Ascaris lumbricoides* is a type of worm from the nematode class which is slightly oval in

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shape with a thick brown outer wall and the egg wall consists of 3 layers. Researchers looked at and matched the results of the images of worm eggs that had been found with the literature of pictures of other nematode worm eggs that from several pictures of nematode worms that had the most similar shape to the worm eggs found, namely *Ascaris lumbricoides*. In the literature, the researchers found that the eggs of Ascaris worms were ovoid (ovoid), with a thick skin and composed of a relatively non-permeable vitelline lipoid membrane, a thick transparent middle layer formed from glycogen and the outer layer contained rough projections, namely the albumin layer. brown (Irianto, 2011).

Worm eggs Strongyloides ransom were found in samples of 2 small intestines. Observations using a microscope showed that the eggs of this worm were oval in shape, thin walls, and parasitized in the small intestine of pigs. This is in accordance with the characteristics of the eggs of theworm, Strongyloides ransomy which researchers have analyzed and identified using the image literature from previous studies by looking at the level of similarity based on the morphology of the eggs of theworm, Strongyloides ransomy which is elliptical, thin-skinned, measuring 45-55 x 26-35. microns in it contain embryos and are found in the small intestinal mucosa of pigs (Levine, 1990). The picture ofworm eggs Strongyloides ransomy is the most consistent with the observations of worm eggs found in samples of 2 small intestines. Therefore, based on the identification and description that has been done, the eggs of these worms are eggs of worms Strongyloides ransom.

Worm eggs were *Trichuris suis* found in 3 feces samples. The eggs found are urn-shaped or citron, have two poles, and the skin is slightly brownish in color. This is in accordance with the literature that the researcher read which describes that the eggs of theworm *Trichuris suis* have a crock-like shape at both ends of which there is an operculum, which is a kind of clear and prominent cover. The wall consists of two layers, the inside is clear and the outside is brown, the eggs are 50 x 25 mm (Soulsby, 1982). In addition, the researchers identified the level of similarity with the literature images and based on previous research. By looking at the level of similarity of the images and from the analysis carried out, it can be concluded that the worm eggs in the 3 stool samples wereworm eggs *Trichuris suis*.

Cestode class worm eggs were found in samples 1 of the small intestine, samples of 2 and 3 of the large intestine, and samples of 2 feces, where the species found was *Taenia solium*. The results of observations with a microscope showed that the eggs ofworms were *Taenia solium* round and had thick walls. The researchers identified and matched the results of the images of worm eggs that had been found with the literature on pictures of other cestode worm eggs, that from several pictures of cestodic worms that had the most similar shape to the eggs of worms found, *Taenia solium*. According to sources that have been analyzed by researchers, the eggs of theworm are *Taenia solium* brown tengguli, round in shape, thick-walled, radier striped embryos surround the hexacans embryo and the egg size is 35 microns (Irianto, 2011). Based on the literature, it can be concluded that worm eggs in sample 1 of the small intestine, samples 2 and 3 of the large intestine, and sample 2 of feces are eggs ofworms *Taenia solium*.

Worm eggs were *Fasciolopsis buski* found in 1 sample of feces. The eggs found are oval in shape, the walls look transparent, and the operculum is yellowish in color. This is similar to the characteristics of

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the eggs of theworm *Fasciolopsis buski* that the researchers identified using the image literature from previous studies by looking at the level of similarity based on the morphology of the eggs of theworm, *Fasciolopsis buski* namely the eggs are slightly oval in shape, 130-140 microns long and 80-85 microns wide. micron, thin-walled transparent with an operculum that is almost visible at one pole (Safar, 2021). Thus, based on the identification and description that has been done, the worm eggs in sample 1 of the feces areworm eggs *Fasciolopsis buski*. This species is the only species of the trematodes class found in this study, according to Sehatman and Edison (2018) *Fasciolopsis buski* can be infected through direct contact with human and pig feces, including in plants and standing water around pig pens and the environment surrounding.

Digestive tract parasites are one of the problems that often cause health problems in livestock. Losses caused by intestinal worm infection include reduced production and reproductive performance. Pigs infected with digestive tract parasites tend to cause appetite and growth disorders. Disruption of growth will last a long time resulting in decreased production. Clinical symptoms of pigs infected with digestive tract parasites are hair loss and weakness, diarrhea, anemia, and being thin over time can even cause death. Transmission can occur through drinking water, feed, contaminated nipples, and unclean cage conditions. Although the impact can endanger the health of livestock, this disease is still often ignored by farmers, especially traditional breeders, as well as pig farmers in Termaal Village, Likupang Barat District and in Poopoh Village, Tombariri District, many still ignore the problem of worms and diseases that can attack pigs.

CONCLUSION

Based on the research that has been done, it can be concluded that samples of local pigs from North Sulawesi from Termaal Village, West Likupang District and Poopoh Village, Tombariri District, were positive for intestinal parasitic worms. The parasitic worms found were *Ascaris lumbricoides*, *Strongyloides ransomi*, *Trichuris suis*, *Taenia solium*, and *Fasciolopsis buski*.

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