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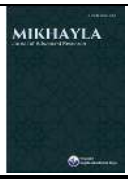

Parasitology Study: *Trypanosoma* sp. In Cattle Blood Tests At The Gorontalo Animal, Fish And Plant Quarantine Center

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ABSTRAK

Penelitian ini bertujuan untuk mendeteksi keberadaan parasit darah Trypanosoma sp. pada sapi bali yang berada di wilayah Balai Karantina Hewan, Ikan, dan Tumbuhan Gorontalo. Sampel diambil dari 27 ekor sapi bali, yang dipilih berdasarkan prevalensi 10% dari total populasi sebanyak 270 ekor. Pengambilan darah dilakukan dari vena auricularis dengan prosedur steril untuk pencegahan infeksi, dan darah yang diambil digunakan untuk pembuatan ulasan darah tipis. Ulasan darah difiksasi menggunakan methanol absolut dan diwarnai dengan larutan giemsa 10% selama 45 menit. Pemeriksaan mikroskopis dilakukan dengan perbesaran 400 hingga 1000 kali untuk mendeteksi keberadaan parasit Trypanosoma sp.. Hasil pemeriksaan menunjukkan bahwa tidak ada indikasi infeksi parasit darah Trypanosoma sp. pada semua sampel ulas darah sapi bali yang diperiksa, dengan tingkat kejadian infeksi tercatat sebesar 0%. Temuan ini menunjukkan tidak adanya infeksi Trypanosoma sp. pada sapi bali yang diuji di wilayah Gorontalo.

ABSTRACT

This study aims to detect the presence of *Trypanosoma* sp. blood parasites in Balinese cattle in the area of Gorontalo Animal, Fish and Plant Quarantine Center. Samples were taken from 27 Balinese cattle, which were selected based on a prevalence of 10% of the total population of 270 cattle. Blood was drawn from the auricular vein using sterile procedures to prevent infection, and the drawn blood was used for thin blood review. Blood reviews were fixed using absolute methanol and stained with 10% giemsa solution for 45 minutes. Microscopic examination was performed at 400 to 1000 times magnification to detect the presence of *Trypanosoma* sp. parasites. The results showed that there was no indication of *Trypanosoma* sp. blood parasite infection in all blood samples examined, with a recorded infection incidence rate of 0%. This finding indicates the absence of Trypanosoma sp. infection in the tested Bali cattle in Gorontalo region.

1. INTRODUCTION

Gorontalo Animal, Fish and Plant Quarantine Center is an agency engaged in public services, namely carrying out certification of agricultural and fishery commodities both animals, fish and plants. Gorontalo Animal, Fish and Plant Quarantine Center called quarantine is a system of preventing the entry, exit and spread of quarantine fish pests and diseases, and quarantine plant disrupting organisms; as well as supervision and / or control of food safety and food quality, feed safety and feed quality, Genetic Engineering Products, Genetic Resources, Biological Agents, Invasive Alien Species, Wild Plants and Animals, and Rare Plants and

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Animals that are entered into, spread from one area to another, and / or removed from the territory of the Unitary State of the Republic of Indonesia (PP No. 29, 2023). Animal quarantine at Gorontalo Animal, Fish and Plant Quarantine Center plays an important role in preventing the spread of animal diseases between regions. Increased livestock mobility has increased the risk of spreading parasites such as *Trypanosoma* sp. Therefore, blood sampling of quarantined cattle is an important step for early detection, maintaining animal health and preventing potential outbreaks in the region.

Trypanosoma sp. is a parasitic protozoan that is the main cause of trypanosomiasis in animals, including cattle. The disease is spread through the bite of blood-sucking flies, which can cause acute or chronic infection. *Trypanosoma* infection has a serious impact on animal health and productivity, such as weight loss, impaired growth, and even death (Kholik *et al*., 2023). The parasite is usually transmitted through triatomine insects, known as killer insects. The transmission process begins when the insect feeds on the blood of an infected mammal, ingesting a form of the parasite called a *tripomastigote* that circulates in the host's blood. Once ingested, these *tripomastigotes* move into the insect's midgut and transform into *epimastigotes*, which multiply rapidly. Next, these parasites migrate to the hind gut of the insect, where they differentiate into metacyclic *tripomastigotes*, the infective form of the parasite. New hosts can be exposed to the parasite when an infected triatomine bug bites another mammal, and in the process, releases *tripomastigotes* via feces into or around the bite wound. This transmission mechanism allows the parasite to spread rapidly among mammals susceptible to infection (Robertson *et al*., 2024). In Indonesia, particularly in Gorontalo Province, research on the presence and prevalence of *Trypanosoma* sp. in quarantined cattle is limited, despite the risk of this infection affecting the livestock sector and local economy.

This research aims to detect the presence of *Trypanosoma* sp. in blood tests of cattle at the Gorontalo Animal, Fish and Plant Quarantine Center. By using accurate laboratory methods, this research is expected to produce precise data on the prevalence of *Trypanosoma* infection in the region. The results of this research will not only provide an overview of the condition of cattle health in Gorontalo, but can also serve as a reference in formulating more effective animal health policies. In addition, these results have the potential to contribute to efforts to prevent zoonotic diseases and improve sustainable animal health management in the future.

2. METHOD

Implementation time in September 2024, with blood test sampling in cattle barns in Biyonga village, Limboto sub-district, Gorontalo district and study research place in Parasitology laboratory, Animal Quarantine, Gorontalo Animal, Fish and Plant Quarantine Center. The research was conducted using a quantitative descriptive study. This research only observes once and measurements are made of variables at the time of research.

2.1 Tools and Material

The tools used in this study are glove, mask, blood, microscope, pipette, glass object and sterile needle. The materials used were blood samples, water, methanol and giemsa solution.

2.2 Research implementation method

1) Sampling

Blood sampling was conducted on 27 out of 270 Balinese cattle as blood sampling, which was determined based on the prevalence of 10% sampling population. Blood sampling was

performed by taking blood from the auricular vein. Prior to puncture, the area around the vein was cleaned using cotton wool soaked in 70% alcohol to prevent infection. A sterile needle was then inserted into the vein, and a small amount of blood was drawn to be dripped onto a glass slide in preparation for blood sampling.

2) Preparation of blood slides

The blood sample that has been taken is dripped onto a glass slide and a thin blood review is made. Once the review is complete, the sample is allowed to dry naturally. The blood review was then fixed using absolute methanol for three minutes to maintain cell quality, and then dried again before further examination.

3) Sample Examination in the Laboratory

The laboratory examination stage begins after the blood sampling process from the cow. Using the thin blood smear method, the samples were stained with 10% giemsa solution for approximately 45 minutes to detect the presence of *Trypanosoma* sp. After staining, the samples were washed with clean water and dried. Examination was carried out under a microscope with magnification between 400 and 1000 times to see the presence of *Trypanosoma* sp. parasites in the blood samples.

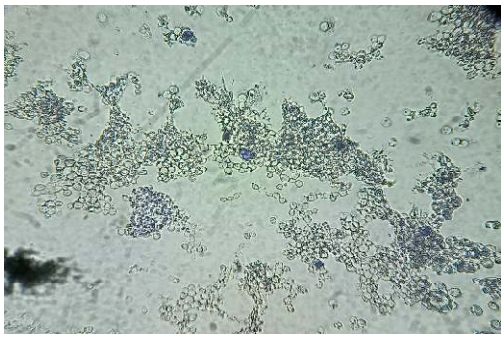
3. RESULT AND DISCUSSION

3.1 Result

Based on the results of a parasitological study of *Trypanosoma* sp. in Balinese cattle at the Parasitology Laboratory, Gorontalo Animal, Fish and Plant Quarantine. 27 Balinese cows were identified as blood test samples from a population of 270 cows as a sampling prevalence of 10%. The results of the blood sample examination are presented in Table 1.

Table 1. Examination results of cattle blood samples at the Parasitology Laboratory, Gorontalo Animal, Fish and Plant Quarantine.

Number of Cattle Blood Review Samples	Negative	Positive
27	27	0



Figur 1. Microscope results of cattle blood test sample examination

Based on the results of the examination of blood test samples of Balinese cattle at the Parasitology Laboratory, Gorontalo Animal, Fish and Plant Quarantine, 27 blood test samples were identified and no Balinese cattle were found to be infected with *Trypanosoma* sp. blood parasites. Overall, all blood test samples showed negative results characterized by no indication

of *Trypanosoma* sp. blood parasites on microscopic blood test preparations. This finding can be seen more clearly in Figure 1. The results of this examination indicate that the incidence rate of *Trypanosoma* sp. blood parasite infection at the Gorontalo Animal, Fish and Plant Quarantine Center is 0%.

In addition, based on the implementation of inspections carried out by the Gorontalo Animal, Fish and Plant Quarantine, there have been no reports of similar infection cases that have occurred in the Gorontalo region, including cattle premises where blood tests of Balinese cattle were taken as quarantine testing targets.

3.2 Discussion

Based on the examination of *Trypanosoma* sp. in 27 blood test samples of Balinese cattle conducted under a microscope with a magnification of 400 times, in all blood test samples no *Trypanosoma* sp. infection was found. This is supported by a number of factors, one of which is influenced by weather factors (Fatoni *et al*., 2024). This factor is strongly supported by the relatively hot climate of Gorontalo, which affects the physical condition of Balinese cattle to survive and affects the proliferation and resistance of the *Trypanosoma* sp. parasite. This influence certainly also inhibits the growth of blood-sucking fly vectors as virulent agents of *Trypanosoma* sp. parasites (Jumadi *et al*., 2019). In addition, based on technical inspection in the field, farmers in Biyonga village, Limboto sub-district, Gorontalo district regularly perform excellent care in terms of vitamin administration, feeding, and cleaning. These activities fully support the physical immunity of their cattle to avoid various diseases such as the blood parasite *Trypanosoma* sp.. Providing quality feed rich in protein, carbohydrates and minerals can help reduce the risk of *Trypanosoma* sp. infection in cattle. In addition, meeting the nutritional needs of livestock accompanied by the provision of vitamin injections plays an important role in increasing the resistance and immune system of livestock, thus supporting their optimal growth (Sabri, 2018). The negative results obtained in this study indicate that the cause of the parasite's inability to grow and multiply, which may be influenced by a strong and well-functioning cattle immune system (Haryadi *et al*., 2022).

4. CONCLUSION

The results of the examination of 27 Balinese cattle blood samples at the Gorontalo Animal, Fish and Plant Quarantine Parasitology Laboratory showed that no cattle were infected with the blood parasite *Trypanosoma* sp., with a recorded infection rate of 0%. This finding is supported by the absence of any indication of parasites in microscopically observed blood test preparations. In addition, to date, there have been no reports of similar cases in the Gorontalo region, including at the blood sampling sites of Bali cattle for quarantine testing, further reinforcing that *Trypanosoma* sp. blood parasite infection is not found in the area.

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