Research Article

Japanese Journal of Gastrointestinal

Identification Of Gastrointestinal Protozoa Of Sumatera Elephant

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Received Date: 01 April 2024
Accepted Date: 16 April 2024
Published Date: 22 April 2024

Citation:
Iwan Doddy Dharmawibawa. Identification Of Gastrointestinal Protozoa Of Sumatera Elephant. Japanese Journal of Gastrointestinal 2024.

1. Abstract:

The protozoan parasites have been reported to infect Sumatran elephants. Gastrointestinal protozoa could potentially be a factor in the decline in the Sumatran elephant population in Indonesia. This study aims to identify the presence of gastrointestinal protozoa in Sumatran Elephant (Elephas maximus sumatranus) in the Lombok Wildlife Park, North Lombok Regency, Indonesia. This research has used fresh fecal samples from 5 Sumatran elephants. The examination of feces samples using native, sedimentation, and floating methods. The research results have identified the presence of gastrointestinal protozoa in 2 of the 5 Sumatran elephant feces examined. The gastrointestinal protozoa found were Eimeria spp with dimensions of 16.30 x 20.93 µm and 25.21 x 38.49 µm. It has been reported that Sumatran elephants are infected with protozoan parasites. The decrease in the Sumatran elephant population in Indonesia may be due in part to intestinal protozoa. The purpose of this study is to determine whether or not the Sumatran Elephant (Elephas maximus sumatranus) at the Lombok Wildlife Park in the North Lombok Regency of Indonesia harbors gastrointestinal protozoa. Five Sumatran elephants' fresh feces were used in this study. the use of native, sedimentation, and floating techniques to examine stool samples. Two of the five Sumatran elephant feces that were analyzed had intestinal protozoa present, according to the research findings. The gastrointestinal protozoa measured 16.30 × 20.93 µm and 25.21 x 38.49 µm were identified as Eimeria spp.

2. Keywords:
Eimeria spp., Lombok Wildlife Park, Sumatran Elephant.

3. Introduction

The Lombok Wildlife Park is a conservation facility that protects a wide range of animal species, including birds, Komodo, elephants, orangutans, hippos, crocodiles, Siamang, langurs, macaques, and sun bears (LPW, 2024). Furthermore, Lombok Wildlife Park is the sole ex-situ conservation area. establishment on the island of Lombok for the Sumatran elephant (Elephas maximus sumatranus). Due to a decline in the elephant population, the Lombok Wildlife Park's Sumatran elephant population needs to be conserved. The International Union for Conservation of Nature and Natural Resources (IUCN) has listed Sumatran elephants in its Red List Data Book (Gopala et al., 2011). The population of Sumatran elephants (Elephas maximus sumatranus) has been declining in Indonesia. The reasons for this decline include habitat loss, poaching, conflict between humans and elephants, and infection with parasites, bacteria, and viruses. According to Soehartono et al. (2007), there were only 2,400–2,800 Sumatran elephants left in the wild, a 35% decline. The natural population of 2014 was It is predicted that the number of Sumatran elephants will continue to drop until 1,800 remain. Elephant disturbances, which can also be brought on by a variety of illnesses like viruses, germs, and parasites that can cause these animals to die, are the primary cause of the fall in the elephant population (Fowler and Mikota, 2006). It has not yet been documented on Lombok Island, but gastrointestinal parasites are one of the diseases that frequently afflict Sumatran elephants. Sumatran elephants (Elephas maximus sumatranus) in Lampung have been shown to be infected by protozoan parasites from the two families Eimeriidae and Phryoscolecidae, with a prevalence of 41.8% for elephants 1-3 years old and 47.2% for elephants 19-36 years old (Herdaus et al., 2015). Protozoal diseases significantly impact elephant health.

They may result in mortality and a reduction in the absorption of nutrients. According to Astiti et al. (2011), animals' digestive tracts can become infected with gastrointestinal parasites, such as protozoa, which can reduce nutritional absorption and cause growth delays (Rahmi et al., 2010). Elephants carry gastrointestinal protozoa that can infect other animals because the cystic form of Eimeria can withstand the environment in tropical regions like Indonesia and spread to other creatures. In tropical and sub-tropical regions of the world, parasitic diseases have emerged as a major threat to the health and productivity of cattle (Kumar et al., 2016). Finding the protozoa in Sumatran elephants can be one step toward breaking the cycle of life. of protozoa since some have different forms and preferred hosts, such as Eimeria, which has infected elephants in Indonesia. According to Dubey (2018), more than 11 Eimeria species are thought to

be frequent in buffalo and cattle, and Eimeria species are typically thought to have distinct hosts. Since there hasn't been any information released about gastrointestinal protozoa in Sumatran elephants at Lombok Wildlife Park—the only ex-situ conservation facility for Sumatran elephants—research was done to find out if gastrointestinal protozoa are present in these animals. The species of elephant is known as Equus maximus sumatranus. Protozoa data can serve as preliminary information about the health of the Sumatran elephants at Lombok Wildlife Park.

4. Method

This kind of study is observational and descriptive. On the population of, observations concerning the occurrence of gastrointestinal protozoa were made. January 2020 photo of Sumatran elephants (Elephas maximus sumatranus) at Lombok Wildlife Park (LWP), North Lombok Regency, West Nusa Tenggara Province, Indonesia. The excrement of five Sumatran elephants served as the population samples for this study. The census method is the sampling strategy used in this study. All members of the population are utilized as samples in a sampling approach known as census sampling or census method. Five Sumatran elephants' feces served as the research samples. A 200-gram sample of fresh elephant dung was retrieved from a Sumatran and placed in a plastic bottle. The sample was then labeled and submerged in 2% potassium dichromate (Herdaus et al., 2015). Samples of Sumatran elephant excrement were then collected right away using a refrigerated box to the Faculty of Veterinary Medicine, Microbiology and Parasitology Laboratory, Universitas Pendidikan Mandalika for analysis. Three approaches were used to examine the gastrointestinal protozoa in the feces of Sumatran elephants: native, sediment, and floating. A modified sugar flotation approach has been shown to be particularly sensitive in identifying oocysts in feces for the detection of Emeria spp. (Ekawasti et al., 2019). The native approach involves collecting a lump of Sumatran elephant dung, putting it on a glass surface, flattening it with a plastic pipette, covering it with a covered glass, and then looking at it under a 10x magnification microscope (Taylor et al., 2007). To use the sedimentation method, take out ± 2 grams of elephant dung. and placing it in a mortar, followed by blending the excrement with a small amount of water. A centrifuge tube is filled with the suspension until it reaches ¾ of the tube's height. After five minutes of centrifugation, the clear liquid above the precipitation was discarded. The precipitate at the top of the tube was then homogenized with the addition of saturated NaCl.

Following that, it was centrifuged once again for five minutes at a speed of 1600 rpm. The centrifuge tube was positioned perpendicularly on the tube rack, and after three minutes, a glass object was connected to the convex surface of the liquid. Saturated NaCl was administered using a small pipette until the liquid's surface became convex. Carefully centrifuge the tube, then quickly flip it around. Ultimately, a cover glass was placed over it, and a microscope was used to examine it (Taylor et al., 2007). To use the floating method, take 3 grams of Sumatran elephant dung, put it in a beaker, add 30 ml of water to make the concentration 10%, and swirl until the mixture is homogenous. Large portions are then removed by filtering it, and the remaining material is gathered in a different beaker. After adding the filtrate to a centrifuge tube until it filled ¾ of the tube, the tube was spun for two to three minutes at 1,500 rpm. The centrifuge tube was then withdrawn, the supernatant was thrown away, leaving the sediment behind, and a floating solution was added to ¾ of the tube. After adding ¾ of the tube volume, mix the sediment until it becomes uniform. This suspension was centrifuged for two to three minutes at 1,500 rpm. After the centrifuge tube has been gently taken out, it is uprightly placed on the test tube rack. After that, the floating liquid is gradually added with a Pasteur pipette until the liquid's surface is convex, and the mixture is left for one to two minutes to allow the parasites to rise to the surface. The lid made of glass is

5. Results And Discussion

Based on the results of microscopic laboratory examinations in identifying gastrointestinal protozoa in 5 samples of Sumatran elephant (Elephas maximus sumatranus) feces located in Lombok Wildlife Park (LWP) North Lombok Regency, West Nusa Tenggara Province using native, sedimentation and floating methods, gastrointestinal protozoa could be found. type Eimeria spp. In 2 samples of Sumatran elephant feces. The results of the examination are presented in Table

6. Conclusion

Two of the five feces of Sumatran elephants (Elephas maximus sumatranus) at Lombok Wildlife Park, North Lombok Regency, West Nusa Tenggra Province, Indonesia, have been found to contain protozoa of the Eimeria spp. The discovered Eimeria spp. were oval-shaped, ranging in size from 16.30 x 20.93 µm to 25.21 × 38.49 µm at its maximum. Better management techniques and increased biosecurity measures could lower the frequency of Eimeria infection in Sumatran elephants.

Acknowledgement

The Veterinary Microbiology and Parasitology Laboratory, Faculty of Veterinary Medicine, Universitas Pendidikan Mandalika is gratefully acknowledged by the authors. The authors express their gratitude to all those who contributed to this study, including the Equine Clinical Skill Center SPANA Laboratory, the Faculty of Veterinary Medicine, Mandalika University of Education, and Lombok Wildlife Park.

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