



Identification Of Intestinal Worms On Horses at The Cipanas Presidential Palace Using The Flotation Method

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ABSTRACT

The Cipanas Presidential Palace has local horses with sandalwood and sumbawa types that are used as riding horses and decorative horses to beautify the palace. The horses are kept by being stabled in the afternoon until morning, and being let out in the morning until evening. This maintenance method certainly carries a risk of gastrointestinal worm infection and often worm infections in horses do not cause clinical symptoms. The purpose of the study was to identify gastrointestinal worms that infect horses at the Cipanas Presidential Palace that are kept in pens and released in the field. This study used fecal samples from 26 horses that were examined using the flotation method. The results of the examination showed that 24 samples were positive for strongylid worm eggs. The percentage of worm infection in horses at the Cipanas Presidential Palace was 92.3%. The findings of *Strongylid* worm eggs are oval with thin walls and have morula like grapes. Adult worms that have *Strongylid* worm eggs are *Strongylus vulgaris*. The cause of horses being infected with worms is due to being let out too early, giving wet grass that is not wilted, and storing wet grass in a damp warehouse. Based on the research above, it was concluded that local horses at the Cipanas Presidential Palace were infected with *Strongylus vulgaris* worms.

INTRODUCTION

Cipanas presidential palace is one of the presidential palaces owned by Indonesia. The Cipanas presidential palace has local horses namely sandelwood and Sumbawa which are used as riding horses and ornamental horses. The horse is kept in a cage in the afternoon until the morning, and displayed in the morning until the evening. This way of maintenance is of course at risk of infection with digestive tract diseases. The digestive system of horses ferments food with microbes in the large intestine (Chaerunissa dkk., 2019), so proper maintenance management is necessary to maintain horse health (Nugroho dan Purwaningsih, 2015).

Research conducted by Wenda dkk., (2020) stated that the disease that most commonly attacks the digestive tract of horses is worm infection with a percentage of 45.45%. The type of worm that often infects horses is the nematode worm. Research by Apriliawati dkk., (2019), the prevalence of nematode infection in horses in Bangkalan Madura Regency is 87%. The types of nematode worms found were *Trichonema spp*,

Strongylus spp, and *Parascaris equorum*. Prawira dkk., (2017) in his research describes the worms that infect the digestive tract of horses in Moyo Hilir District, Sumbawa, namely *Triondontophorus spp.*, *Stroglyoides westeri*, *Oxyuris equi*, *Strongylus spp.*, and *Parascaris equorum*.

Worm infection in horses requires confirmation of the diagnosis, one of which is by conducting laboratory tests. Laboratory tests that can be carried out to determine the presence of worm infections are by examining feces. Stool examination aims to determine the presence or absence of worm eggs or infective larvae in the examined feces. Stool examination can be done qualitatively using the flotation method (Widiyanti dkk., 2020). This research aims to identify gastrointestinal worms that infect horses at the Cipanas Presidential Palace that are kept in pens and released in the field.

RESEARCH METHOD

Flotation Procedure

The stages of the flotation method are weighing 2

grams of feces then mixed with 58 ml of float solution and homogenized. The solution is then filtered. Homogenization and filtering were carried out 3 times. The solution is then poured into a test tube to form a convex meniscus and covered with a glass cover. The solution was left for 10-15 minutes, then the cover glass was removed and placed on a glass object and examined under a microscope with a magnification of 40x. The flotation method used is in accordance with the procedure used by Siagian dan Tiuria (2018).

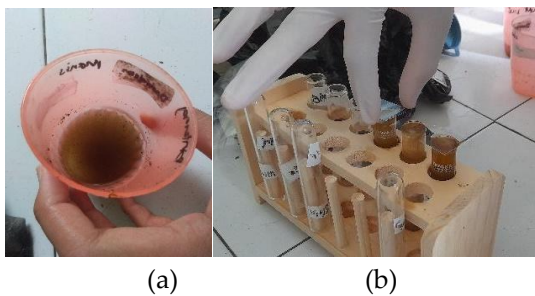


Figure 1. Examination of feces samples by flotation method (a). a mixture of saturated salt sugar solution with filtered feces (b). The cover glass is placed on the convex meniscus above the test tube

RESULT AND DISCUSSION

Signalement and Anamnesa

The examination was carried out on 26 horses consisting of 25 sandalwood horses and 1 Sumbawa horse. The sex of the horses examined consisted of 11 males and 15 females. The horses examined were aged from 7 months to 26 years with a body weight range of 225-327 kg. Anamnesis from horses at the Cipanas Presidential Palace, namely that some of the horses are in the umbar and some are used as riding horses. There were 12 horses displayed with sex 11 females and 1 male pup. Horses are umbar in umbar stables starting at 08.00 WIB until 14.30 WIB.

Preparation of Tools and Materials

The preparation of tools and materials is done first before taking stool samples. The tools used in conducting sample inspections are gloves, plastic, stirring rods, measuring cups, drinking glasses, test tubes, test tube racks, filters, funnels, glass

objects, cover glass, markers, double tips, gutting, cooler boxes, digital scales, cell phones and microscopes. The materials used in the sample examination were 26 samples of horse feces, sugar, salt, and water. Making a floating solution of saturated salt sugar by weighing 500 grams of sugar and 400 grams of salt, then preparing 1 liter of water. Sugar and salt are mixed into water and homogenized until the solution is saturated.

Sampling

Sampling and examination was carried out from July 07 to July 13, 2022 at the Horse Stable Laboratory of the Cipanas Presidential Palace. Samples were taken directly from each individual horse during defecation. Fresh horse feces samples were taken using plastic and labeled according to the horse's name. The faecal samples were stored in a cooler box until laboratory tests were carried out. Identification of worms in horses using the floating method using a saturated salt sugar solution.

Worm Egg Identification

The results of the examination of feces using the flotation method on 26 samples of horse feces at the Cipanas Presidential Palace showed 24 samples were positive for the presence of worm eggs. The percentage of helminth infections in horses at the Cipanas Presidential Palace is 92.3%. The type of worm eggs identified is *strongylid* worm eggs.

Based on the results of examination under a microscope the shape of *Strongylid* eggs was found to be oval, with thin walls, and there was a morula like a grape. This morphology is in accordance with what was stated by (Kaur dkk., 2019) that *Strongylid* eggs have a characteristic oval shape and contain a morulla that is shaped like a grape and measuring 82.31 μ m x 51.00 μ m.

Strongylus spp worm eggs take three days to become infective larvae (L3). *Strongylus spp* has a direct life cycle. *Strongylus spp* eggs are laid by adult female worms in the cecum and large intestine and then excreted in the feces into the environment. The development from eggs to L3 in good conditions takes approximately two weeks.

Five stages of development are recognized in the life cycle of this parasite, namely the first larval stage (L1), the second larval stage (L2), the third larval stage (L3), the fourth larval stage (L4) and the fifth larval stage (L5). The eggs that come out with the feces will hatch into L1. Larva 1 molts into L2 in the feces and then changes into L3. L3 retains the L2 cuticle so that it has a double-layered sheath. L3 leaves the feces and migrates to find food, then L3 is digested by the horse (Shite dkk., 2015).

Table 1. Results of examination of feces samples on horses at the Cipanas Presidential Palace using the flotation method

Horse Name	Horse Function	Result	Types of worm eggs	Sex	Age (year)
Bintang	Riding	Negative	-	♂	5
Daragem	Riding	Negative	-	♂	17
Obos	Riding	Positive	<i>Strongylid</i>	♂	14
Bongkok	Riding	Positive	<i>Strongylid</i>	♂	7
Black Mustang	Riding	Positive	<i>Strongylid</i>	♂	9
Boyke	Riding	Positive	<i>Strongylid</i>	♂	9
Wingke	Riding	Positive	<i>Strongylid</i>	♀	4
Wulandari	Riding	Positive	<i>Strongylid</i>	♀	10
Oshin	Riding	Positive	<i>Strongylid</i>	♀	2
Juni	Riding	Positive	<i>Strongylid</i>	♀	2
Junior	Riding	Positive	<i>Strongylid</i>	♂	2
Clado	Riding	Positive	<i>Strongylid</i>	♂	4
Birma	Riding	Positive	<i>Strongylid</i>	♂	5
Ghazi	Riding	Positive	<i>Strongylid</i>	♂	2
Aria	Riding	Positive	<i>Strongylid</i>	♂	4
Melin	Riding	Positive	<i>Strongylid</i>	♀	5
Nengsih	Riding	Positive	<i>Strongylid</i>	♀	19
Kencana	Riding	Positive	<i>Strongylid</i>	♀	2
Lisa	Riding	Positive	<i>Strongylid</i>	♀	26
Sari	Riding	Positive	<i>Strongylid</i>	♀	16
Dewi Kunti	Riding	Positive	<i>Strongylid</i>	♀	7
Zara	Riding	Positive	<i>Strongylid</i>	♀	2
Manis	Riding	Positive	<i>Strongylid</i>	♀	12
Asih	Riding	Positive	<i>Strongylid</i>	♀	4
Euis	Riding	Positive	<i>Strongylid</i>	♀	17
Blackies	Riding	Positive	<i>Strongylid</i>	♀	2

L3 larvae removes the sheath and attacks the horse's large intestinal mucosa. *Strongylus spp* will migrate extensively to various organs of the horse. These worms will return to the lumen of the large intestine to reach sexual maturity and begin to lay eggs (Nielsen dan Reinemeyer, 2018). Horses can become infected by eating grass contaminated with eggs, infective larvae, or penetration through the skin by infective larvae when horses graze in pastures (Widyastuti dkk., 2017).

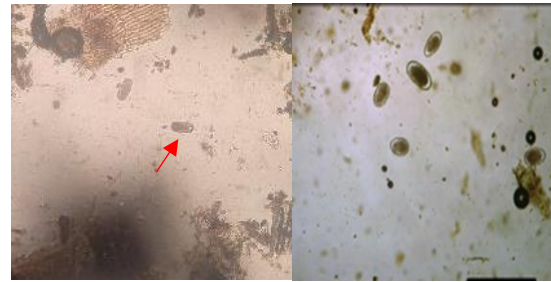


Figure 2. *Strongylid* worm eggs. (a). Findings with 10x magnification. (b). Attia dkk., 2018

Causes of Worms and Risk Factors for Worm Infection

Feeding horses at the Cipanas Presidential Palace uses concentrate and forage feed. Forage feed comes from the results of independent cultivation by the Cipanas Presidential Palace and through the process of cutting grass in the spacious area around the palace. Field grass cutting is done in the morning at 7 o'clock with the condition of the grass being taken wet. Grass harvesting in the morning increases the risk of carrying *Strongylus vulgaris* larvae. The wet grass is collected in a forage warehouse at the Cipanas Presidential Palace which is not exposed to sunlight. This condition causes the grass to become damp. The moist conditions of the grass in the barn increase the life span of *Strongylus* larvae in wet grass. This condition increases the occurrence of helminth infections. This statement is in accordance with what was found by (Osterman-Lind dkk., 2022) Horses are infected with this worm due to the provision of wet forage. Umbar horses are infected by directly eating grass that has been infected with worm eggs and worm larvae when displayed and giving grass in the cage in the afternoon.

The cause of *Strongylus vulgaris* worm infection in horses is generally caused by grass that is used as feed comes from grazing fields where horses also drop feces containing worm eggs. These eggs will develop and then hatch into infective larvae (Hernández dkk., 2018). *Strongylus* larvae are photophobic. *Strongylus* larvae in the morning will rise to the surface of the grass along with the dew, in the afternoon the larvae will descend back to the bottom to avoid hot temperatures. (Osterman-Lind dkk., 2022).

Factors that influence the development and survival of *Strongyle* larvae in grasslands include climatic conditions, soil type, geographical location, and type and number of plants. High rainfall can also lead to an increase in soil moisture (Dhewiyanti dkk., 2015).

Strongylus vulgaris worm infection in horses is influenced by age, feed, maintenance methods, and gender. The older the horse, the lower the infection rate, because the horse's immune system is well-formed. A good immune system takes a long time (Clark dkk., 2018). Female horses are more susceptible to helminth infections than males, this is because the mare's immune system has decreased due to the horse experiencing heat (hormonal). This statement is supported by the statement of Romero dkk., (2020) and Joly dkk., (2023), decreased immunity to parasites in horses can also be caused by decreased levels of the hormone estrogen causing horses to become stressed, the hormone LTH (Luteotrophic Hormone) which reduces milk synthesis and pregnancy factors so that female horses are infected with worms which are higher than male horses.

CONCLUSION

The results of the examination of feces using the flotation method on 26 samples of horse feces at the Cipanas Presidential Palace showed 24 samples were positive for the presence of worm eggs. The percentage of helminth infections in horses at the Cipanas Presidential Palace is 92.3%. The type of worm eggs identified is *Strongylid* worm eggs.

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