Occurrence of *Anaplasma* sp. infection in pigs (*Sus scrofa*) at Morgan Farm, Palangka Raya City

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ABSTRACT

This research was conducted to identify the occurrence of *Anaplasma* sp. infection in pigs (*Sus scrofa*) at Morgan Farm, Pahandut Subdistrict, Palangka Raya City. Palangka Raya City is one of the cities that has great potential to develop pig livestock, but the shortcomings of the farms in Palangka Raya City still apply traditional housing with poor cage sanitation. Samples in this study were obtained from Morgan Farm with a total of 68 pig blood samples, then examined at the Animal Health and Veterinary Public Health Laboratory of Palangka Raya City, then starting with the preparation of PBS solution and making blood review preparations using 10% Giemsa staining. The blood obtained was then reviewed using object glass, absolute methanol, and stained with Giemsa 10%. Identification was carried out using a trinocular microscope with a magnification of 400x and immersion oil was dripped on the object glass. The results of this research showed that 29 pig blood samples were positive out of 68 pig samples, with an occurrence rate of 42.6%. The morphology of *Anaplasma* sp. found is that there is a round, purplish-blue dot shape at the edge of red blood cells. From these results it can be concluded that the infection of *Anaplasma* sp. in pigs (*Sus scrofa*) at Morgan Farm, Pahandut District, Palangka Raya City is 42.6%, which means that the infection is very high for Palangka Raya City.

Keywords: *Anaplasma* sp., Occurrence, Palangka Raya City, *Sus scrofa*

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INTRODUCTION

Pigs (*Sus scrofa*) are livestock that have the potential to be developed, the advantages of pigs are that they have higher weight gain and growth with certain feeds, the calories contained in the meat are higher, and pigs are high profile animals that can give birth as many as a year. twice (Simangunsong *et al.*, 2022; Palenga *et al.*, 2022). According to the Directorate General of Animal Husbandry and Animal Health (2020), the population of pigs in Indonesia is quite large, namely 7,280,310 heads. The number of pigs in Central Kalimantan Province is 198,260, so Palangka Raya City is one of the cities that has great potential for cultivating pigs (BPS, Directorate General of Animal Husbandry and Animal Health, 2022).

The city of Palangka Raya still implements traditional animal husbandry by not maintaining the cleanliness of the cages and providing feed that pays little attention to nutritional value and hygienic factors. Pig farming is not free from environmental problems, one of which is caused by livestock manure, urine and leftover feed which can cause environmental pollution, so that bacteria will grow and cause disease in livestock (Tulak *et al.*, 2020). The spread

of disease in livestock is also supported by climatic conditions, the city of Palangka Raya has Schmid and Ferguson climate conditions, namely a tropical climate with high rainfall throughout the year, as well as geographical conditions that have peat soil, gravel and loose chunks of river and swamp sediment, so that if heavy rain will result in muddy soil, this will support the number of vectors to increase (Supriyati *et al.*, 2023; Adimulya, 2023).

Vectors are blood-sucking flies or ticks that can transmit disease pathogens into the animal's body, one of the vectors that can transmit blood parasites is Stomoxys calcitrans (Fetene *et al.*, 2021; Putra *et al.*, 2019). *Anaplasma* sp. has been found in pigs in Lhoknga District, Aceh Besar Regency (Magai *et al.*, 2021), as well as Theileria sp. was found in pigs in Polewali Mandar Regency, West Sulawesi (Arfin *et al.*, 2017).

The city of Palangka Raya can be a good transmission medium for blood parasite infections, if seen from the climatic, geographical and environmental conditions of the cage, so the researcher's aim is to determine the incidence of *Anaplasma* sp. at the Morgan farm in Palangka Raya City, and is useful for increasing information regarding *Anaplasma* sp infection. which infected pigs (*Sus scrofa*) at Morgan Farm, Palangka Raya City.

METHODS

The pigs used as samples in this study were aged 19 days, 2 months, 2.5 months and 8 months and were male and female. Pig blood was collected using a 3 cc syringe via the jugular vein, then the blood was put into an EDTA Vaculab tube and put into a coolbox, then the coolbox containing the blood samples was taken to the UPT Animal Health and Veterinary Public Health Laboratory of Palangka Raya City to make test preparations. blood and microscopic examination. The tools used in this research were alcohol cotton, micropipette, EDTA Vaculab tube, EDTA tube rack, object glass, digital analytical balance scale, Hot Plate Magnetic Stirrer, object glass drying tool, lens cleaning tissue, coolbox, and trinocular microscope. The materials used are PBS solution of KH2PO4 9.078 gr and Na2HPO4 2H2O 11.876 gr, absolute methanol, immersion oil, 70% alcohol,

Examination of this sample begins with making blood smear preparations with 10% Giemsa staining. The blood obtained is dripped onto a glass object, then at a 45o angle, slide the blood so that the blood is evenly distributed, then fixed for 1 minute using absolute methanol, then placed in 10% Giemsa solution for 30 minutes, then rinsed using running water and dried. , when it is dry, an examination is carried out by dripping immersion oil on a glass object and a microscopic examination is carried out using a trinocular microscope with 400x magnification (OIE, 2018; Apsari *et al.*, 2017). The incidence rate is calculated using the Timreck formula. 2004 and explained in descriptive form.

$$\text{Prevalence} = \frac{\text{Total positive samples}}{\text{Total samples}} X\ 100$$

RESULT AND DISCUSSION

The results of the examination of 68 pig blood samples showed that 29 samples were positive for *Anaplasma* sp. The incidence rate obtained from the examination was 42.6%. Morphology of *Anaplasma* sp. What was found was a round dot like a purplish blue ball in the middle and at the edge of the red blood cells. This is in accordance with research by Magai (2021) which showed dark purple dots at the edges of the red blood cells with 10% Giemsa staining.

The current report by Magai *et al.* (2021), *Anaplasma* sp. has infected pigs in Lhoknga District, Aceh Besar Regency, while reports of *Anaplasma* sp. infecting pigs in Kalimantan is still not found.

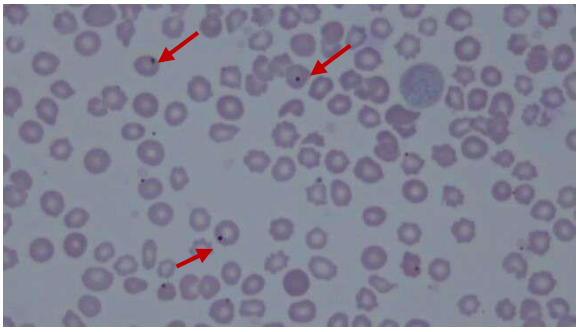

Figure 1. *Anaplasma* sp. in pig blood is indicated by a red arrow

In this study, it was found that pigs aged more than 2 months and less than 2.5 months were more likely to be infected with *Anaplasma* sp., this is supported by the statement of Siagian *et al.* (2021), that infections are more susceptible to attacks in young animals compared to adult animals, because the specific immune system in young animals is not yet fully formed. According to Aubry and Geale (2011), *Anaplasma* sp infection. in pigs under 6 months of age usually do not show any clinical symptoms but are proven to be chronically infected, supported by the statement of Vieira *et al.* (2019), in a report in Brazil that animals less than 6 months old were more susceptible to infection compared to older animals. The gender of the animal does not affect *Anaplasma* sp infection. supported by reports in Pakistan that did not find any susceptibility to *Anaplasma* sp. on gender, because this is related to the spread of the vector, vector population, management system and cage sanitation, if the spread of the vector is high in the cage supported by poor cage management it will support *Anaplasma* sp infection. increasing (Salim *et al.*, 2022; Al-Hosary *et al.*, 2020).

Morgan Farm supports the increase in *Anaplasma* sp. infections. because the environment of the Morgan farm does not maintain the cleanliness of the cages, has wet land, and wild plants around the cages, this supports the spread of vectors. According to Lalupada *et al.* (2021), cage conditions that do not pay attention to cleanliness with wet land, feces and urine left in the cage will cause the cage to become smelly and dirty, this supports the presence of vectors and increases the spread of vectors. These environmental conditions also support the growth of blood-sucking flies such as Stomoxys calcitrans and Tabanus fuscicostatus (Rodrigues *et al.*, 2022; Lalupada *et al.*, 2021).

According to Turangan *et al.* (2024), factors such as temperature, air humidity, surface texture and light support the density and distribution of flies, one of which is blood-sucking flies. Climatic conditions with high rainfall also support the spread of vectors (Day, 2016). Control can be done using chemical acaricides, and prevention can be done by maintaining cage sanitation and implementing good maintenance management (Aminah *et al.*, 2022; Ekawasti *et al.*, 2016). Treatment of *Anaplasma* sp infection. In pigs this can be done by giving Imidocarb 5.5 mg/kg BW intramuscularly 2 times within 2 weeks (Muhittin *et al.*, 2022).

CONCLUSION

The incidence of *Anaplasma* sp. infection. in pigs (*Sus scrofa*) on the Morgan farm in Palangka Raya City, it was 42.6%, this could happen because it was supported by environmental conditions in the pen that did not maintain cleanliness with damp and

dirty land, thus supporting the spread of vectors.

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