

INTISARI

Analisis Morfologi dan Molekuler *Leucocytozoon* sp. dan *Plasmodium* sp. pada Ayam Ras Petelur di Yogyakarta

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Parasit darah pada ayam petelur, seperti *Leucocytozoon* sp. dan *Plasmodium* sp. dapat menimbulkan kerugian bagi peternak akibat penurunan produksi maupun kematian. Identifikasi *Leucocytozoon* sp. dan *Plasmodium* sp. pada ayam ras petelur Indonesia belum banyak dilakukan. Analisis secara morfologi dan molekuler dapat membantu untuk mengetahui spesies spesifik *Leucocytozoon* sp. dan *Plasmodium* sp. serta variasi genetik antar spesies. Studi ini bertujuan untuk menganalisis morfologi, analisis molekuler pada *Leucocytozoon* sp. dan *Plasmodium* sp., serta melihat korelasi umur, populasi, dan tipe kandang terhadap Leucocytozoonosis dan Plasmodiosis. Penelitian ini menggunakan 137 sampel darah ayam layer dari empat Kabupaten di Yogyakarta. Metode yang digunakan pada penelitian ini yaitu apus darah dengan pewarnaan Giemsa dan *nested* PCR dengan target gen *cytochrome b* (*cytb*). Pemeriksaan apus darah menunjukkan 18,97% sampel positif (26/137) dengan ditemukannya fase trophozoit, *erythrocytic meront*, dan mikrogametosit *Plasmodium* sp., serta fase merozoit, dan gametosit *Leucocytozoon* sp. Hasil PCR menunjukkan 39,53% positif (34/86). Hasil sekuensing menunjukkan jarak genetik yang sangat dekat (0—1%) dengan *P. juxtanucleare*. Terdapat perbedaan sekuens nukleotida dan sekuens protein pada dua sampel di Kulon Progo (WA 10, WA 24). Sampel Sleman (SL 7 N) menunjukkan jarak genetik 0% dengan *Leucocytozoon* sp. Analisis *chi-square* menunjukkan tidak adanya hubungan antara tipe kandang, umur, dan populasi terhadap *Leucocytozoon* dan *Plasmodium* ($p > 0,05$).

Kata Kunci: Ayam, *Leucocytozoon*, Molekuler, PCR, *Plasmodium*

ABSTRACT

Morphology and Molecular Analysis of *Leucocytozoon* sp. and *Plasmodium* sp. in Layer Chicken in Yogyakarta

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Blood parasites in layer chickens, such as *Leucocytozoon* sp. and *Plasmodium* sp., lead to economic losses for farmers. *Leucocytozoon* sp. and *Plasmodium* sp. in layer chickens in Indonesia remain poorly identified. Morphological and molecular analyses could aid in determining the species of *Leucocytozoon* sp. and *Plasmodium* sp., as well as the genetic variation between species. The purpose of this study was to identify *Leucocytozoon* sp. and *Plasmodium* sp. from four districts of Yogyakarta, both morphologically and molecularly. This study also aimed to identify the correlation between the age, population and cage type of chickens and the occurrence of Leucocytozoonosis and Plasmodiosis. This study using 137 layer chickens blood samples from four districts in Yogyakarta. The methods used in this study were Giemsa staining and nested PCR of the cytochrome b (cytb) gene. Microscopic examination revealed that 18.97% of the samples (26/137) were infected with blood parasites. Trophozoites, erythrocytic meronts and microgametocytes of *P. juxtannucleare* as well as merozoite and gametocytes of *Leucocytozoon* sp. were found in the blood smear samples. PCR result revealed 39.53% samples were positive (34/86). *Plasmodium juxtannucleare* and *Leucocytozoon* sp. were identified in the sequenced samples. There was a low genetic distance between the sequenced samples and *P. juxtannucleare* (0—1%). Single mutation in nucleotide and protein sequences were found in Kulon Progo (WA 10, WA 24). Sample from Sleman (SL 7 N) showed 0% genetic distance to *Leucocytozoon* sp. There was no correlation between age, population and cage type of chickens to *Leucocytozoon* or *Plasmodium* infection ($p>0,05$) according to chi-square analysis.

Keywords: Chicken, *Leucocytozoon*, Molecular, PCR, *Plasmodium*