



A Preliminary Investigation of the *Haemoproteus* Infection in Domestic Pigeons of Torkaman County, Iran by Microscopic and Molecular Methods

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Received: 6 February 2023, Accepted: 11 April 2023

[10.22059/jvr.2023.354541.3325](https://doi.org/10.22059/jvr.2023.354541.3325)[20.1001.1.20082525](https://doi.org/10.1001.1.20082525)

Abstract

BACKGROUND: The protozoan *Haemoproteus* belongs to the Phylum Apicomplexa, Class Sporozoa, and Order Haemosporina. Avian haemosporidian are protozoan parasites that use birds as hosts around the world. Many species of wild and domestic doves are natural hosts of different species of *Haemoproteus*. Blood-sucking arthropods are the main vectors of these blood parasites.

OBJECTIVES: The aim of this study was the microscopic and molecular investigation of the protozoan *Haemoproteus columbae* in the blood of infected pigeons in Torkaman County, Iran.

METHODS: Blood samples and tubes containing ethylenediaminetetraacetic acid (EDTA) anticoagulant were collected from 96 domestic pigeons randomly from 14 pigeon lofts and different parts of Torkaman County. Pigeons were also inspected for infection with the host-vector *Pseudolynchia canariensis*. In the next step, blood smears were stained with Giemsa and examined microscopically. Also, blood tubes containing EDTA were tested by PCR method on the cytochrome b gene.

RESULTS: Microscopic and molecular examination of peripheral blood showed that 62 (64.58 %) and 73 (76.04 %) of the investigated pigeons were contaminated, respectively. Of the 62 infected pigeons infected with the *Haemoproteus*, 28 pigeons (66.66 %) were male, and 34 (62.96 %) were female. Also, the infestation with *Pseudolynchia canariensis* was observed in 4 (28.57 %) pigeon lofts.

CONCLUSIONS: The preliminary investigation shows the high rate of *Haemoproteus* infection in pigeons in Torkaman County. Further studies to determine the prevalence and accurate identification of the species infecting pigeons in this region require PCR testing and sequencing of infected blood samples.

Keywords: *Homoproteus*, Infection, Microscopic, Molecular, Pigeon

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How to cite this article:

Figure Legends and Table Captions

Table 1. The sequence of Primers Used to Amplify Part of *Haemoproteus columbae* Cytochrome b Gene and the Size of the Amplified Product.

Table 2. Rate of Infection of Pigeons in Torkaman County With *Haemoproteus* Based on Sex by Microscopic Method.

Figure 1. Erythrocytes Infected With *Haemoproteus* Gametocytes (Stained With Giemsa).

Figure 2. Electrophoresis of PCR Products of *Haemoproteus* Samples. Note: 3-18 positive samples; 2 negative samples, M: marker.