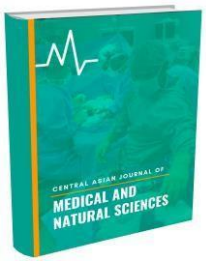

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*Article*

# Isolation and Diagnosis of Some Intestinal Helminthes from the Migratory Starling to Kirkuk Governorate

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**Abstract:** In this study, 60 common starlings caught in Kirkuk Governorate were collected and cut up between December 2023 and March 2024. Their intestines were looked at to see if they had intestinal worms. The results showed that birds had two kinds of intestinal worms: Acanthocephalan Spp. 12 (20%) and Passerilepis crenata 5 (8.33%). We meticulously illustrated the morphological features of the recovered helminths using a microscope and identified them with the aid of reference books.

**Keywords:** Sturnus Vulgaris, Acanthocephalan Spp, Passerilepis Crenata, Kirkuk

## 1. Introduction

*Sturnus vulgaris* is one of the migratory birds that come from Europe, Asia, Africa, Russia, and Australia. It enters Iraq in large flocks from the north in the month of October and continues to move southwards and leaves Iraq in March and April [1]. Its size range is about 20 cm. It has shiny black feathers and sometimes becomes speckled with white. The legs are pink, and the beak is black in the winter and yellow in the summer [2].

Starlings are considered one of the most important wild birds that transmit and spread parasites, some of which are considered to cause serious diseases [3,4]. Therefore, they have received more global attention than other birds [5]. It's like other animals are exposed to infection with internal and external parasites, which harmfully affects birds' effectiveness and tissues as a result of their secretion of some substances that may be toxic[6].

Researchers think that the digestive tract is the most likely place to get parasitic worms from eating food that has infectious stages on it or parasitic worm eggs [7]. Most reports of acanthocephalans and cestodes have come from both free-ranging and captive large passerines, like starlings [8]. In Kirkuk, adequate studies have not been conducted on this subject, which encouraged us to carry out this study in order to isolate and diagnose some intestinal worms from the migratory starling to Kirkuk city.

## 2. Materials and Methods

Sixty starlings were collected by mist nets during the period from December 2023 to March 2024 in the Kirkuk governorate, which is located 238 kilometers north of Baghdad. After being caught, it was brought alive to the laboratory, anesthetized with chloroform, and dissected using large scissors with a scalpel. Then, the abdominal area was opened, starting from the chest to the end of the body. The internal organs and intestines were isolated and dissected longitudinally to search for parasitic worms. A light microscope

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examined and diagnosed the samples in a Petri dish. The acanthocephalans were kept in 70% ethanol for identification after they had been relaxed, and the cestodes were kept in 70% ethanol for identification after they had been killed and preserved in hot formalin for a few hours. We used reference books to make the identifications [9].

**Figure 1.** Morphological picture of starling bird show the intestinal tract.

## 3. Results and Discussion

The percentage of total infections with parasitic worms was 28.3% out of a total of 60 starlings, as shown in Table 1. Two types of parasitic worms were recorded through examination of the digestive tract: Acanthocephalan spp. appeared in twelve starlings, with an infection rate of 20% (Fig. 2), and Passerilepis crenata in five starlings, with an infection rate of 8.3% (Fig. 3).

**Table 1.** Percentage of infected and un infected examined starlings.

| Samples | No. of examined starlings | No. of infected starlings | Percentage of infected starlings | No. of uninfected starlings | Percentage of uninfected starlings |
|---|---|---|---|---|---|
| Starlings | 60 | 17 | 28.3 | 43 | 71.4 |

Table 2. **Percentage of helminthes infection in starlings.**

| Helminthes | No. of infected starlings | Percentage of infected starlings |
|---|---|---|
| Acanthocephalan Spp. | 12 | 20 |
| *Passerilepis crenata* | 5 | 8.3 |
| *Total* | 17 | 28.3 |

**Figure 2.** Acanthocephalan Spp. worms which collected from twelve starling bird.

**Figure 3.** *Passerilepis crenata* worms which collected from five starling bird.

Acanthocephala is a group of parasitic worms that are often called "thorny-headed worms" because both the larvae and adults have a retractable proboscis, which is a tube-like structure at the head with sharp, recurved hooks. The spines on their eversible proboscis allow them to penetrate and cling to their host's intestinal wall. Cestodes, or tapeworms, take up nutrients from the bird's intestinal canal and lack digestive processes. Many birds' species harbor cestodes, which can weaken the bird and increase its susceptibility to other illnesses and predators [10]. The life cycles of acanthocephalans are complicated and involve at least two hosts, which can include fish, amphibians, birds, mammals, and invertebrates [11]. There are roughly 1,420 species known to exist [12]. Furthermore, our record aligns with the first report (Acanthocephalans) by Molan in Erbil, Iraq [13], and the second report (Saeed) in Baghdad, Iraq [14].

Passerilepis crenata is a species of cestode (tapeworm). It primarily parasitizes birds, particularly those in the Corvidae family (crows, ravens, etc.). It has been found in various geographical regions: Europe, Asia, and the Russian Far East. The life cycle involves intermediate hosts, with the beetle Geotrupes sylvaticus identified as one known intermediate host [15]. In Iraq, from S. vulgaris, the cestode Passerilepis crenata was isolated. Abdul-Razak conducted the study in 1998 [16], Abdullah *et al*. in 1993 [17], and Abdulabas in 2005[18]. The results in this current study were consistent with the findings [19,20,21].

## 4. Conclusion

This study provides a baseline survey of intestinal helminths in common starlings in Kirkuk Governorate. The study identified Acanthocephalan spp. and Passerilepis crenata, resulting in a total infection rate of 38.33%. These findings contribute to our understanding of the helminths in migratory birds and highlight the potential role of starlings in the dispersal of these parasites.

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