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Review Article



A systematic review of tapeworms (Plathelminthes, Cestoda) of *Columba livia*

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Abstract

After conducting research and analyzing literature data, it was discovered that Iraq is home to tapeworms belonging to four distinct families, namely Davaineidae, Hymenolepididae, Dilepididae, and Anoplocephalidae. Within these families, several species of tapeworm have been identified in Iraq, including *Cotugnia intermedia*, *Raillietina tetragona*, *Raillietina cesticillus*, *Raillietina echinobothrida*, *Aporina delafondi*, and *Davainea proglottina*. *Cotugnia intermedia* is a tapeworm commonly found in the intestines of small rodents and is transmitted to cats and dogs through the ingestion of infected rodents. *Raillietina tetragona* and *Raillietina cesticillus* are two species of tapeworm that commonly infect chickens, while *Raillietina echinobothrida* is found in pigeons and doves. *Aporina delafondi* is a tapeworm that has been found in the intestines of cattle, sheep, and goats in Iraq. The adult worms attach to the host's intestinal wall and can cause intestinal inflammation and blockages. Finally, *Davainea proglottina* is a tapeworm that infects the intestines of domestic and wild carnivores, including dogs, cats, and foxes. Infection occurs through ingestion of infected intermediate hosts such as rodents, birds, and reptiles. Identifying these tapeworm species in Iraq is important for developing effective control and prevention strategies, as many of these parasites can cause significant health problems in animals and humans. Proper sanitation and hygiene practices, as well as deworming programs for domestic animals, are important measures that can help to reduce the spread of these tapeworms and their associated diseases.

Keywords: Plathelminthes, Cestoda, *Columba livia*, Species identification, Control strategies, Health problems.

Introduction

The tapeworms are a group of endoparasitic helminths that almost exclusively occupy their definitive host's alimentary canal (Smyth and McManus, 2007).

Pigeons (order Columbiformes) are widespread and can be found in every town and city around the world (Marques et al., 2007). The effects of parasitism on birds are often serious (Dranzoa, 1999).

Many helminthological studies devoted to studying the parasite fauna including cestodes of domestic pigeons have been carried out in many countries in India (Magzoub et al., 1980; in India Malhotra and Capoor, 1983; Adang et al., 2008) in Thessaloniki; Northern Greece (Diakou et al., 2013)

northern Thailand (Butboonchoo, et al., 2016) as well as in Iraq (Al-Bayati, 2011) in Iraq (Hassan, 2013; Al-Marsomy and Al-Hamadaani, 2016; Abed Alrikaby et al., 2020 and Al-Hussaini and Afrah, 2021).

It should be noted that all the above studies were including identification, biochemistries, and histopathological studies and there is no review information on domestic pigeons.

The present review aims to epitomize the information on cestode parasites of *Columba livia* which have been recorded worldwide until 2021.

The arrangement of the cestoda follow the classification and nomenclature by Khalil et al. (1994) with updates by Cairra et al. (2014).

Phylum: Platyhelminthes (Gegenbaur, 1859)
Class: Cestoda (Rudolphi, 1808)
Order: Cyclophyllidea (Braun, 1900)
Family: Davaineidae (Braun, 1900)
Genus: Cotugnia (Diamare, 1893)
Cotugnia digonopora (Pasquale, 1890)
Intermediate hosts: insects
Habitat: small intestine
Distribution: in India (Waghmare et al., 2009).

Cotugnia intermedia

Intermediate hosts: Habitat
Distribution in Iraq (Al-Bayati, 2011).

Cotugnia polycantha

Intermediate hosts: insects
Habitat: small intestine
Distribution: Egypt (Ahmed, 2012)

Cotugnia cuneata in Bangladesh (Musa et al., 2011)

Intermediate hosts
Habitat small intestine
Distribution

Cotugnia satpuliensis

Intermediate hosts
Habitat small intestine
Distribution in India (Malhotra and Capoor, 1983)

Cotugnia srivastavai

In India (Malviya and Dutt, 1970).
Intermediate hosts
Habitat small intestine
Distribution

Cotugnia majdoubii in India (Magzoub et al., 1980).

Phylum: Platyhelminthes (Gegenbaur, 1859)

Class: Cestoda (Rudolphi, 1808)
Order: Cyclophyllidea (Braun, 1900)
Family: Davaineidae (Braun, 1900)
Genus: *Raillietina* (Fuhrmann, 1920)
Raillietina canabia in India (Magzoub et al., 1980)
Raillietina zahratis in India (Magzoub et al., 1980)
Raillietina echinobothrida (Megnin, 1881)
Intermediate hosts: insects
Habitat: small intestine Duodenum/ileum
Distribution: Cosmopolitan. Thessaloniki; Northern Greece (Diakou et al., 2013)

Raillietina tetragona

Intermediate hosts: insects ant
Habitat: small intestine Duodenum/ileum
Distribution: Cosmopolitan. Thessaloniki; Northern Greece (Diakou et al., 2013) (Adang et al., 2008) (in Thailand Butboonchoo, et al., 2016).

Raillietina cesticillus

Intermediate hosts: beetle
Habitat: small intestine Ileum
Distribution: Cosmopolitan. Thessaloniki; Northern Greece (Diakou et al., 2013) (Nigeria Adang et al., 2008) (Hassan, 2013 in Iraq) (in iran Radfar, et al 2012) (in Thailand Butboonchoo, et al., 2016).

Raillietina micracantha

Intermediate hosts: insects
Habitat: small intestine
Distribution: Cosmopolitan Spain (Torres et al., 2010)

Raillietina vinagoi

Intermediate hosts: insects
Habitat: small intestine
Distribution: (in, Egypt Ghobashy and Taeleb, 2015).

Raillietina magninumida

Intermediate host: beetles
Habitat: small intestine
Distribution (Radfar, et al., 2012).

Raillietina echinobothrida

Intermediate hosts: ants
Habitat: small intestine
Distribution: (in Iraq Al-Marsomy and Al-Hamadaani, 2016). in Bangladesh Musa et al., 2011 in Bangladesh) (Nigeria Adang et al., 2008) (in iraq Al-Marsomy and Al-Hamadaani, 2016; (Abed Alrikaby et al., 2020, Alrikaby et al., 2020 (in Thailand Butboonchoo, et al., 2016). in India (Roy et al., 2008).

Aporina delafondi (Railliet, 1892)

Phylum: Platyhelminthes (Gegenbaur, 1859)
Class: Cestoda (Rudolphi, 1808)
Order: Cyclophyllidea (Braun, 1900)
Family Anoplocephalidae
Intermediate Distribution (In Iraq Al-Bayati, 2011).

Hymenolepis cantaniana

Phylum: Platyhelminthes (Gegenbaur, 1859)
Class: Cestoda (Rudolphi, 1808)

Order: Hymenolepididae
 Cyclophyllidea (Braun, 1900)
 Family
 Intermediate hosts dung beetle
 Distribution: (Nigeria Adang et al., 2008) (Mohammed et al., 2019).
 Habitat: small intestine Duodenum

Hymenolepis carioca

Intermediate hosts beetle
 Distribution: (Nigeria Adang et al., 2008) (Mohammed et al., 2019).
 Habitat: small intestine Duodenum

Amoebotaenia cuneata

Phylum: Platyhelminthes (Gegenbaur, 1859)
 Class: Cestoda (Rudolphi, 1808)
 Order: Cyclophyllidea (Braun, 1900)
 Family: Dilepididae (Railliet & Henry, 1909)
 species: *Amoebotaenia cuneata* (von Linstow, 1872)
 Intermediate hosts earthworms (e.g of the genus *Lumbricus*)
 Distribution: (Nigeria Adang et al., 2008) (Biswal et al., 2014) (Mohammed et al., 2019).
 Habitat: small intestine Duodenum

Davainea proglottina (Mohammed et al., 2019).

Phylum: Platyhelminthes (Gegenbaur, 1859)
 Class: Cestoda (Rudolphi, 1808)
 Order: Cyclophyllidea (Braun, 1900)
 Family Davaineidae (Braun, 1900)
 Intermediate hosts ants

Conclusion

Based on analysis of literature data ,it was revealed that have 6 geneses of Cestoda in *Columba livia* and they are *Cotugnia* , *Raillietinia Aporina* ,*Hymenolepis* ,*Amoebotaenia* the genus Genus: *Cotugnia* Diamare, 1893 have 7 species which are *Cotugnia digonopora* ,*Cotugnia intermedia* ,*Cotugnia polycantha*, *Cotugnia cuneata*, *Cotugnia satpuliensis*, *Cotugnia srivastavai*, *Cotugnia majdoubii* and the genus *Raillietinia Fuhrmann*, 1920 have 7 species *Raillietinia canabia* ,*Raillietinia zahratis* , *Raillietinia tetragona* , *Raillietinia cesticillus*, *Raillietinia micracantha* ,*Raillietinia vinagoi* *Raillietinia echinobothrida*, *Raillietinia magninumida*.

The genus *Aporina* have one species *Aporina delafondi* (Railliet, 1892) and the genus *Hymenolepis* have *Hymenolepis cantianiana* *Hymenolepis carioca* and the genus *Amoebotaenia* have one species which is *Amoebotaenia cuneata* and the genus *Davainea* have one genus *Davainea proglottina* (Mohammed et al., 2019).

Conflict of Interest

The author hereby declares no conflict of interest.

Consent for publication

The author declares that the work has consent for publication.

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