

Full Length Research Paper

New host record of *Abbreviata baltazardi* (Nematoda: Physalopteridae) from the lizard, *Laudakia (Agama) nupta* in Rawandoz mountains, Kurdistan Region

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This study investigation represents the first on parasites of the lizard, *Laudakia nupta nupta* not in Iraq but all over the world. An intestinal nematode, *Abbreviata baltazardi* has been recovered from the lizard, *L. nupta nupta* caught from Rawandos mountains in Kurdistan region, Iraq. The main characteristics of this nematode are: mouth with large simple triangular lateral lips armed with one tooth or more, two amphids were also observed in addition to external circle of papillae. Cuticle with clear transverse striations and may be reflected forwards over the lips to form cephalic collarete; oesophagus divided into two portions, glandular and muscular; excretory pore open at the anterior part of the body. Male 25 to 28 mm in length with well developed caudal alae meeting ventrally in front of cloaca, and usually supported by at least four pairs of long protruded papillae and a number of sessile papillae of which there are generally pre anal and five post-anal; spicules dissimilar. Female: 29 to 34 mm in length, vulva in the anterior half of the body; two uteri are present, uterus with 2 branches, oviparous, eggs elongated, smooth, thick-shelled, not capsulated, embryonated. *A. baltazardi* was collected from sunwatcher toad head agama, *Phrynocephalus heliosopus*, *Skrijabinodon pigmentatus* and *Spauligodon lacerate* as such, *L. nupta nupta* is now considered a new host for this nematode. Moreover, Kurdistan represents a new locality of this species of nematode as no one reports this species from Kurdistan region.

Key words: Lizard, *Laudakia nupta nupta*, *Agama nupta*.

INTRODUCTION

In Iraq, there are several species of reptiles so, Khalaf (1959) wrote a book about them, in his book among the

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reptiles reported is *Agama nupta* De Filippi while its subspecies is *Agama nupta fusca*, while Mahdi and George (1969), gave the subspecies as *A. nupta nupta*. Anderson (1999), while describing Iranian reptiles gave some scattered information about Iraqi reptiles especially those found in close territory, he reported that *A. nupta* are found in the foothills of the Zagros mountains in eastern Iraq, but he changed the genus name to be *Laudakia nupta nupta*, with the *L. nupta nupta* called large-scaled rock *Agama*, while *A. nupta fusca* is yellow-headed *Agama*. Therefore, our species is *Laudakia (Agama) nupta nupta* as it is not yellow-headed.

Reptiles all over the world were investigated for their parasitic fauna. In India, Johnson (1966) described a new oxyurid nematode of genus *Thelandros* from *Calotes versicolor* (Daud, 1889) with a key to the Indian species of the genus *Calotes*. In the following year, Johnson (1967) reported the occurrence of *Thelandros alatus* (Wedl, 1862) in India. In Africa, Goldberg and Bursey (2001) studied the intestinal parasites of four species of skinks (*Mabuya*) from Southern Africa, were they reported five species of nematodes including *Abbreviata paradoxa*, and gave a comprehensive review of previous reports of helminthes from *Mabuya* spp.

In Nigeria, Omonon et al. (2011) carried out a parasitological study on *Agama* lizards (*Agama agama*) were they revealed two species of nematodes: *Strongyluris brevicaudata* and *Thelandros annulatus* estimating their percentage of infection. Recently, Halajian et al. (2013) studied the helminth parasites of the European glass lizard, *Pseudopus apodus*, European grass snake and *Natrix natrix* from Iran. One species of Nematode, *Entomelas entomelas* was revealed in *P. apodus*. Several research were performed in Iraq concerning nematodes of Iraqi vertebrates such as fishes (Rahemo, 1978; Ali et al., 1987; Moravec and Rahemo, 1993; Moravec et al., 2009; Al-Jadoaa, 2002), amphibians (Al-Barwari and Nassir, 1983), birds (Al-Khateeb et al., 1982; Al-Alousi and Daoud, 1993; Al-Darajii et al., 1998) and mammals (Mahmoud, 1974; Shamsuddin and Mohammad, 1978) but very little on reptiles.

Al-Barwari and Nassir (1983) had recovered *Thelandros* sp. from two lizards, *Hemidactylus flaviviridis* and *H. persicus*. Later on, Hassan and Abdulla (1989) described *Thelandros* sp. and *Thelandros micilosae* from the rough-scaled gecko, *Cyrtodactylus scaber*. Al-Zako (1999), made a comprehensive survey on nematodes of amphibians, reptilians and birds, she described four species of nematodes from reptiles namely, *Neopharyngodon* sp. from *Gymnodactylus scaber*, *Thelandros vittatae* sp. from *Mabuya vittata*, *Trispulscaris* sp. from *Mabuya vittatae* and *Camllanus* sp. from *Testudo graeca*. Recently, Al-Barwari and Saeed (2007) investigated 7

species of Iraqi reptiles for helminthes perarasites, and they found 7 species of nematodes namely: *Thelandros* sp., *Microtetrameres* sp., *Angusticaecum holopterum*, *Tractis dactyluris*, *Tachygonetria nicolleri*, *Camallanus microcephalus* and *Falcaustra japonensis*. More recently, Al-Moussawi (2010) reported for the first time adult nematode *Tanqua anamala* from wall of gastro-intestinal tract of the dice snake, *Natrix tessellate tessellata*. As reported earlier, there is no report anywhere about the parasites of *Laudakia (Agama) nupta* neither from Iraq nor from any region of the world, so this study will provide the first investigation about parasites of the lizard, *L. nupta nupta*, and first host record of the nematode, *Abbreviata baltazardi*. Furthermore, Iraq is considered as a new locality of *Abbreviata baltazardi*.

MATERIALS AND METHODS

A collection trip was organized by Kurdistan natural history museum to Rawandos region by museum staff, and members of Biology Department on the 13 of October, 2013. By using a gun, two lizards were shot dead then dissected to obtain their viscera, both of them were fixed in 4% formalin, then brought to the laboratory of the museum to dissect the gastrointestinal tract. Only nematodes specimens were obtained, fixed in 4% formalin, examined under microscope after mounting in glycerin or water. The specimens then transferred to water adding 70% ethyl alcohol which was examined by the first author. Some specimens were sent to Dr Goldberg for examination. Photographs were taken using MDCE-5A digital camera.

RESULTS AND DISCUSSION

After thorough examination of more than 16 specimens of nematodes, it appears clearly that these nematodes belong to:

Order: Spiruridea
 Family: Physalopteridae
 Genus: *Abbreviata*
 Species: *Abbreviata baltazardi*

Remarks: Mouth with large simple triangular lateral lips armed with one tooth or more, two amphids were also observed in addition to external circle of papillae. Cuticle with clear transverse striations and may be reflected forwards over the lips to form cephalic collarette (Figures 1 to 4). Oesophagus divided into two portions, glandular and muscular (Figure 2). Excretory pore open at the anterior part of the body (Figure 5) posterior to the nerve ring (Figure 5 and 6). Male: 25 to 28 mm in length with well developed caudal alae (Figure 6) meeting ventrally in front of cloaca, and usually supported by at least four pairs of long, protruded papillae (Figure 8), and a number



Figure 1. Photomicrograph of *Abbreviata baltazardi*: lips of the anterior region and papillae. $\times 100$.



Figure 2. Photomicrograph of *A. baltazardi*, Nerve ring anterior to excretory pore and cephalic collaret. $\times 40$.

of sessile papillae of which there are generally pre anal and five post-anal spicules dissimilar (Figure 9 and 10). Female: 29 to 34 mm in length, vulva in the anterior half of the body; two uteri are present, uterus with 2 branches (Figure 11); Oviparous; eggs elongated, smooth, thick-shelled, not capsulated (Figure 12), embryonated, measures in utero 0.065 to 0.077 in length and 0.043 to 0.051 mm in width.

Depending on the characters observed in these specimens, it can easily be placed under the family

physalopteridae, with basic similarities to the species, *Physaloptera clausa* (Gorgani et al., 2013), different from *P. phryosoma* collected from the horned lizards from South-Western United States as the male spicules are not similar and eggs are capsulated, and the species measurement is quite smaller than the present specimens (Olsen, 1974). It is important to note that two species of *Abbreviata* have been reported from mammals, namely *Abbreviata caucasica* recovered from numerous mammals including *Gorilla gorilla* from



Figure 3. Photomicrograph of *A. baltazardi*: Clear cephalic collaret. $\times 40$.



Figure 4. Photomicrograph of *A. baltazardi*, transverse striations and external circle of papillae in addition to central amphids. $\times 40$.



Figure 5. Photomicrograph of *A. Baltazardi*, excretory canal and excretory opening. x100.



Figure 6. Photomicrograph of *A. baltazardi*, Nerve ring surrounding the esophagus. x100.



Figure 7. Photomicrograph of *A. Baltazardi* posterior end of the male with 4 pairs of papillae $\times 40$.



Figure 8. Photomicrograph of *A. baltazardi*, male spicules $\times 100$.

oesophagus, *Pongo pygmaeus* from stomach, *Cercopithecus mitis* from small intestines, *Macaca mulatta*, *Papio* sp and man. Other species, *Abbreviata poicilometra* has been recovered from *C. mitis* from stomach, and from *Cercocebus torquata* (Gorgani et al., 2013). Our specimens are clearly different from these two mammalian species in many characters. Halajian et al. (2013), reported that *Abbreviata baltazardi*, *Spauligodon lacerate*, *Skrjabinodon pigmentatus* and *Phryocephalus*

heliosopus were recovered from the sunwatcher toad head agama.

Conclusion

Therefore, this study represents the first in Iraq. In addition, the lizard *L. nupta nupta* is considered a new host for the specie *A. baltazardi*.



Figure 9. Photomicrograph of *A. baltazardi*, two equal small male spicules $\times 100$.



Figure 10. Photomicrograph of *A. baltazardi*, caudal alae of male $\times 100$.



Figure 11. Photomicrograph of *A. baltazardi*, uterine branches $\times 100$.



Figure 12. Photomicrograph of *A. baltazardi*, eggs $\times 400$.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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