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# Parasitological Studies on Agama Lizard (Agama Agama) in Ibadan

**[1]Omonona AO, [2]Adedokun OA, [1]Adekoya-Gafaar SA**

*[1]Department of Wildlife and Fisheries Management, University of Ibadan, Nigeria*
*[2]Department of Veterinary Microbiology and Parasitology, University of Ibadan, Nigeria*

Omonona AO, Adedokun OA, Adekoya-Gafaar SA: Parasitological Studies on Agama Lizard (Agama Agama) in Ibadan

ABSTRACT

The parasitological studies of agama lizard *(Agama agama)* in Ibadan was carried out by selectively picking sixty growing agama lizards of lengths ranging from 22.9cm to 37.5cm (snout-vent length), from five local governments in Ibadan, Oyo state, Nigeria. The lizards were dissected for the collection of the worms which were found in the stomach, intestine and rectum. The worms were identified with a microscope. Parasitological variables were presented on tables and summarized as percentages. *Strongyluris brevicaudata* and *Thelandros annulatus* were the prevalent parasites. Across the five local governments, *Strongyluris* brevicaudata had the highest infection rate in Ibadan South East (87.50%) while *Thelandros* annulatus was highest in Ibadan North (75.86%). The prevalence of infection of *Strongyluris* brevicaudata was higher than *Thelandros* annulatus. The entire male and female specimens examined were found to be parasitized. Females had higher intensity of infection in Ibadan North (51.72%), South east (54.68%) and North west (53.57%) while the male had the highest infection rate in only two local governments, Ibadan North East (48.44%) and Ibadan South West (49.15%).

***Key words:*** Parasites, Agama Lizard, Nematodes, Thelandros annulatus, Strongyluris brevicaudata.

## Introduction

Lizards are apparently found everywhere in many of the warmer parts of the world because of their poikilothermic nature. Lizards vary in size, shape and colour. They have different ways of moving about and defending themselves. In Africa, the lizards commonly found are Geckos, Agama lizard, chameleons, monitor lizard, Alligator lizard and typical lizard [3]. The smallest lizard is the gecko while the largest lizard is the Komodo dragon; this huge East Indian lizard is about 9 or 10 feet long. The Komodo dragon belongs to a group of lizard known as monitor [3]. The skin of many larger lizards such as iguanas, chuckwallas, and monitors is used for leather goods such as handbags, wallets and shoes [7]. Lizards are also used for food, especially among poor people and in some agricultural areas they serve *as* important role in insect control [7]. Some lizards are kept as pet [14] and they are not aggressive to man unless cornered [13].

According to Wekhe and Olayinka [16], *Agama agama* serves as transporter and reservoir host to several protozoan and helminthes parasite. Some parasites of Lizards pose risks to man, who can act as intermediate host [1]. Man can be infected with *Raillietiella* species by having their hands contaminated from the faeces or saliva of the reptile, and accidentally ingesting the eggs [9]. Usually, there are no clinical signs; however, some people may develop localized inflammation. The larvae can encyst in various tissues, causing abdominal pain, vomiting, constipation, diarrhea, and a tender abdomen [1].

**Corresponding Author**

Omonona Abosede Olayemi, Department of Wildlife and Fisheries Management, University of Ibadan, Nigeria.
Phone: +234803725848
E-mail: aomonona@yahoo.co.uk

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Capillaria philippinensis causes human intestinal capillariasis [1].

Many common endoparasites of reptiles have direct life cycles and can multiply to staggering numbers [10]. *Aeromonas* and *Pseudomanas species*, common oral inhabitants, are most frequently isolated, along with a variety of other gram-negative and gram-positive bacteria [10]. *Entamoeba* histolytica infection is an Amoebiasis of lizard that has been reported [17]. Coccidiosis of the gall bladder occurs in *Anolis* sp of lizard [17]. In malaria (*Plasmodium* sp) infection, host originally becomes infected with sporozoties stages of the parasite which are injected into the blood stream usually via the saliva of an infected female mosquito while it is taking a blood meal [5].

A limited number of ectoparasites are seen, except on wild and newly acquired reptiles. Mites are distributed worldwide, and most reptilian species are affected [4]. Reduced vitality and, in heavy infestations, death due to anemia may occur. Skin of affected reptile appears coarse, and dysecdysis is frequently observed [4]. The mites, 1.5mm long is often found near the eye caps, gluttural folds, or any other indentation on the reptile [4]. Mites may also be associated with mechanical transmission of *Aeromonas hydrophila;* a variety of other bacteria, and rickettsial agents [4]. Ticks are frequently found on reptiles, and heavy infestations may result in anemia [4]. The parasitology of Agama lizard is important to aid the diagnosis or prevention of disease [8] in health monitoring. However, the lack of information on most helminthes parasitizing lizards in Africa prevent better understanding of the relationship between these parasites and their hosts in Africa and also, possible host that can harbor species that can potentially infect man. The purpose of the study is, therefore, to isolate and identify the blood parasites and intestinal worms of Agama Lizards in Ibadan metropolis.

## Materials and methods

*Sampling Location:*

The samples were selectively picked from five local governments in Ibadan, Oyo state, Nigeria, viz. Ibadan North (I), Ibadan North east (II), Ibadan North West (III), Ibadan South East (IV) and Ibadan South West (V). Sixty (60) growing Agama lizard (*Agama agama*) length ranging from 22.9cm to 37.5cm (snout-vent length) were used for the study.

*Parasite Detection and Identification*:

100ml mark measuring cylinder, fine mesh sieve, microscope, glass slide and cover slips were all used as apparatus.

*Worm Identifications:*

Agama lizard collected from the 5 different local governments, were sacrificed at different times. The lizards were divided into equal portions from the local governments and were then dissected for the collection of the worms which were found in the rectum, intestine and stomach. The Fresh worms collected from the animals using gloved hands, were identified with a microscope in the parasitological laboratory and specimens of nematodes found were cleared in lactophenol before examination under a microscope [1]. The blood parasites were identified by the laboratory attendants in the veterinary clinical pathology laboratory, university of Ibadan, before confirmation.

*Data Analysis:*

Parasitological variables were presented on tables and summarized as percentages. The percentage prevalence of parasite present in the local government areas was determined using the following formula

$$\%\,of\ Parasites\ prevalence = \frac{no\ of\ parasites identified}{total\ no\ of\ parasites\ found} \times 100$$

The percentage occurrence of parasite species in both sexes was determined using this formula

$$\%\,occurence\ in\ each\ sex = \frac{no\ of\ lizard\ \text{inf}\ ected\ in\ each\ sex}{total\ no\ of\ lizard\ in\ each\ sex} \times 100$$

## Results and discussions

A rarely reported nematode *Threlandros annulatus* and *Strongyluris brevicaudata* were the parasites prevalent in the lizards collected from the five local governments. *S. brevicaudata* was reported by Adeoye and Ogunbanwo [1] to infest 82.3 % of the agama lizards sampled.

Table 1 reveals that *Thelandrous sp* in Ibadan North had the highest percentage of infection with 75.86% and *Strongyluris sp* with 24.14%.

In Ibadan East, *Strongyluris sp* has the highest infection with 62.50% and *Thelandros sp* with 37.50%. In Ibadan South East the highest infection was in *Strongyluris sp* of 87.50% and 12.50% with *Thelandros sp.*

In Ibadan South West the highest infection was in *Strongyluris sp* with 74.58% and *Thelandros sp* of 25.42%. In Ibadan North West, the infection of both parasites was equal with 50.00% each. The prevalence of infection of *Thelandros sp* was not as high as *Strongyluris* sp (Table 1).

The preferred site of *Thelandros sp* was the rectum although a few of them were in the intestine.

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The most infected organ, in the study of Adeoye and Ogunbanwo [1] was found to be the rectum. This is due to the fact that endoparasites seek places in the host that provide maximum nutritional value to it [1]. The rectum, filled with unabsorbed partly digested food, serves as a convenient habitat for nematode [1]. Helminth acquisition thus appears to be related with the diet of saurian reptiles [12].

Thelandros annulatus is characterized by a simple mouth that is surrounded by three lips (Figure 1). The oesophagus consists of a short pharynx and posterior bulb containing a cuticular valvular apparatus which is separated from the intestine by a slight constriction. Males have single spicules and the females have constricted tail behind the anus to form a terminal spine.

*Strongyluris brevicaudata* is characterized by lips that are expanded anteriorly (Figure 2). It has a relatively long pharynx with posterior bulb. The males have two long spicules of equal length and female have one spicule.

All the male and female specimens examined were found to be parasitized and the intensity of infection was not the same (Table 2). Amo *et al.* [2] stated that males and females seem to be similarly susceptible to parasites infection, as the prevalence of infection were similar in both sexes. Females have a higher intensity of infection in Ibadan North (51.72%), South east (54.68%) and North west (53.57%) while the male had the highest infection intensity in only two local governments, Ibadan North East (48.44%) and Ibadan South West (49.15%) respectively. It is clear that females had high infection of *Strongyluris brevicaudata* and *Thelandros annulatus* (Table 3). According to Adeoye and Ogunbanwo [1] the difference between prevalence in male lizards and female lizards is small. An insignificant difference between intensity and prevalence in sexes was recorded in a research conducted by Ibrahim *et al.* [6]. Similar studies in lizards [15] and other organisms have found that males are more susceptible to parasite's infection probably due to the immune suppressive effects of testosterone, at least during the reproductive period [11].

The relationship between sites, sex and types of parasite on Table 3 shows that the lizarsd with the highest percentage of *T. annulatus* parasite were found in Ibadan North (male) and *S. brevicaudata* parasites is Ibadan North East (female) with 100% for both respectively, while those with low percentage of *Strongyluris* sp parasites were found in Ibadan North (male) lizards 33.3% with Ibadan South East (female) the lowest with *Thelandrous* sp. 33.3%.

In conclusion, two species of parasites were found in lizards with the females having higher level of infection in three local government areas out of the five local government areas studied. Further work on this topic has to be carried out in order to isolate and identify other organisms that parasitize Agama Lizard so as to ensure their proper health management.

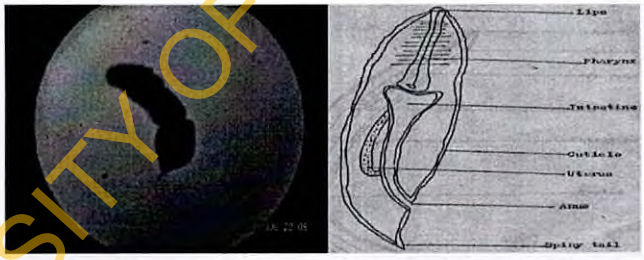


**Fig. 1:** Whole mount of Thelandros annulatus and sketch showing body parts.

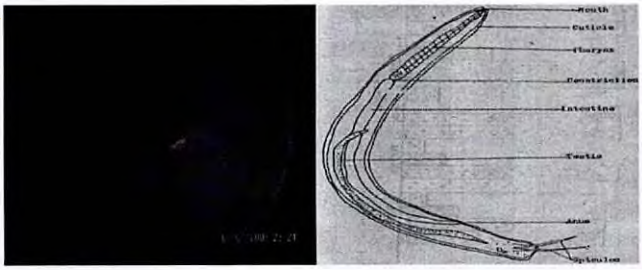


**Fig. 2:** Whole mount of Strongyluris brevicaudata and a sketch showing body parts.

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**Table 1:** Shows the prevalence of helminthes *Thelandros annulatus* and *Strongyluris brevicaudata* in Ibadan.

| Parasites | IBN | | IBNE | | IBSE | | IBSW | | IBNW | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No of parasites | % | No of parasites | % | No of parasites | % | No of parasites | % | No of parasites | % |
| Thelandros annulatus | 44 | 75.86 | 24 | 37.50 | 8 | 12.50 | 15 | 25.42 | 28 | 50.0 |
| Strongyluris brevicaudata | 14 | 24.14 | 40 | 62.50 | 56 | 87.50 | 45 | 74.58 | 28 | 50.0 |
| Total | 58 | | 64 | | 64 | | 59 | | 56 | 100 |

IBN- Ibadan north; IBNE- Ibadan northeast: IBSE- Ibadan southeast; IBSW- Ibada southwest: IBNW- Ibadan northwest.

**Table 2:** Gives the percentage occurrence of parasites in males and females lizards from the five locations.

| Location | Number of parasites in male | Number of parasites in female | Total number of parasites | Male (%) | Female (%) |
|---|---|---|---|---|---|
| Ibadan N | 28 | 30 | 58 | 48.28 | 51.72 |
| Ibadan NE | 33 | 31 | 64 | 51.56 | 48.44 |
| Ibadan SE | 29 | 35 | 64 | 45.31 | 54.68 |
| Ibadan SW | 30 | 29 | 59 | 50.85 | 49.15 |
| Ibadan NW | 26 | 30 | 56 | 46.43 | 53.57 |

**Table 3:** Shows the relationship between sites, sex and type of parasites in Ibadan.

| Location | Sex | Number of lizard examined (n = 60) | Number infected with Thelandros sp (%) | Number Infected with *Strongyluris sp* (%) |
|---|---|---|---|---|
| IBN | M | 6 | 6 (100.0) | 2 (33.3) |
| | F | 6 | 5 (83.3) | 2 (50.0) |
| IBNE | M | 6 | 5 (83.3) | 5 (83.3) |
| | F | 6 | 5 (83.3) | 6 (100.0) |
| IBSE | M | 8 | 4(50.0) | 7(87.5) |
| | F | 4 | 3(33.3) | 3 (75.0) |
| IBSW | M | 4 | 2 (50.0) | 3 (75.0) |
| | F | 8 | 4 (50.0) | 7(87.5) |
| IBNW | M | 5 | 3(60.0) | 4 (80.0) |
| | F | 7 | 6 (85.7) | 5(71.4) |

Note: Figures in the brackets represents the percentage of occurrence

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