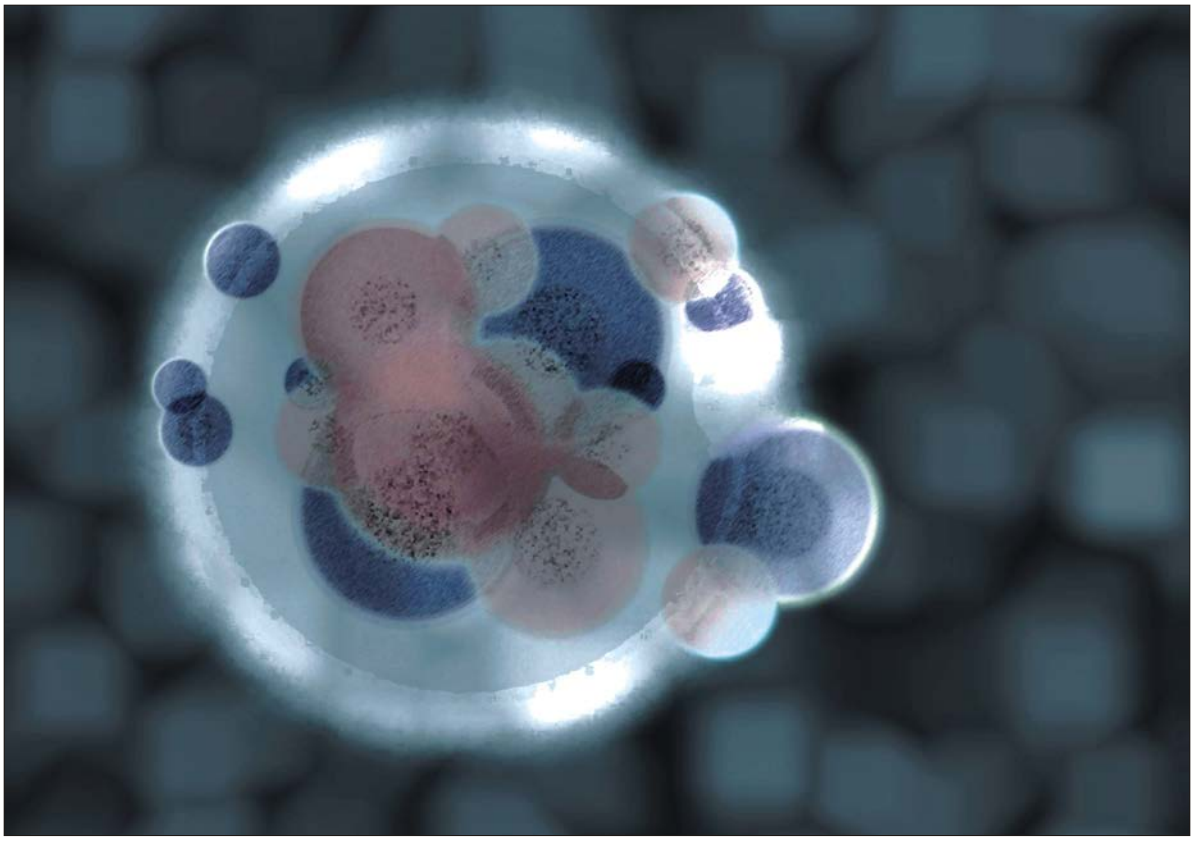

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Morphology and Significance of Some Helminth Parasites of the Wall Gecko

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Abstract: The legated intestine of some sacrificed experimental wall geckos were systematically examined for gut parasites. 42(60%) of the animals examined (n = 70) were infected with helminthes identified as cestodes of the family proteocephalidae, which infected 29(41.4%) of the geckos and nematodes of the family pharyngodonidae, which infected 21(30.0%) of the geckos, respectively. The polyzoic cestode organism had typical features of the platyhelminth parasites, which commonly infect man and domestic animals. The nematodes however, had prominent tails and respectively, species seen were morphologically indistinguishable from *Thelandros bulbosus*, *T. mule* and a *Stongyluris* species, except for dissimilar genital apparatus and reduced caudal alae. Some speculations were made to suggest the phylogenic link of gecko parasites with related human parasites in their developmental history. It was concluded that these gecko parasites were of potential zoonotic risk to man and domestic animals, because of their morphological similarity to the human parasites and for the sharing of common domestic abode by man and the gecko.

Key words: Gecko, helminthes

INTRODUCTION

A variety of small lizards of diverse forms commonly referred to as the 'wall gecko' usually inhabit dark arboreal sites in most tropical areas[1,2]. These domestic reptiles are avid insectivores and are often seen crawling on walls and ceilings of buildings in search or pursuit of insects for food. Over 140 species of the gecko have been identified in Nigeria and other arrears of the West African sub region[1,3]. It has been reported that the gecko is a host to various parasites[4,5]. This study identifies with the increasing interest in the parasites of the lower vertebrates, especially the wall gecko[2,5]. In this study, some parasitic helminthes recovered from the wall gecko in Northern Nigeria are described. Speculative comments are also made linking the significance of the findings to the ecology of parasitized host.

MATERIALS AND METHODS

Specimen of geckos examined in this study, were collected from Jos, Plateau State, about the central area of Nigeria. The lizards were trapped with sweep net and transferred into separate clean covered trays containing some cotton-wool soaked in chloroform. A sacrificed animal was immediately dissected and the legated intestine carefully opened up. This was put in small petri dishes of saline water. A pin-head hair brush was used to scrub the mucous membrane of the intestine into each dish. This was to remove any adhering worms. Bits of faecal materials seen were homogenized and any debris was removed with the aid of finely pointed forceps. This was then examined by the simple smear technique[6]. Faecal matter in the petri dishes were also cleared of any debris and then examined under the dissecting microscope to confirm any organisms. Worms recovered were preserved in 70% alcohol and thereafter prepared for identification by a rapid method of staining with haematoxylin[6].

RESULTS

Both cestodes and nematodes were found to infect the lizards, which had also ingested some termites. All parasites were recovered from the lower intestine of the host animal. The species of cestodes seen had infected 42 (31.1%) of geckos examined (Table 1). The adult cestode was a polyzoic organism, which measured 400×2.8 mm on the average and had up to 300 segments. It was a whitish ribbon-like tapeworm, which tapered at the anterior. Four prominent suckers were located at the sides, surrounding a fifth terminal one at the tip of a

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Table 1: Percentage helminthes infection of wall gecko

Geckos	No. examined	No. infected with Cestodes (%)	No. infected with nematodes (%)	Total infected with helminthes (%)
Male	33	17 (54.5)	9 (27.3)	27 (81.8)
Female	3	9 (29.0)	4 (12.9)	13 (41.9)
Juvenile	6	2 (33.3)	0	2 (33.3)
Total	70	29 (41.4)	21 (30.0)	42 (60.0)

Figure in bracket is rate (%)

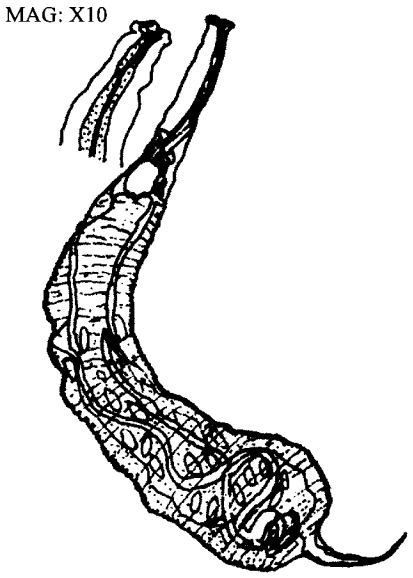

Fig. 1: *Thelandros bulbosus*

Fig. 2: *Thelandros* spp.

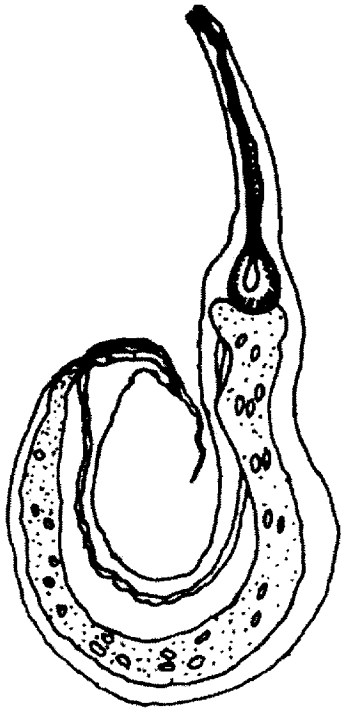

Fig. 3: *Strongyluris* spp.

well-formed rostellum. The genitalia and vitellaria were located laterally while matured proglottids were as long as they were wide. The parasites however had gravid segments, which were longer than broad and enlarged into spherical or barrel-shaped sacs of eggs, some of which contained hexacanth embryos. These features are characteristic of the tapeworms of the family proteocephalidae[7].

Nematodes recovered were all oxyuroids[8], with the typical bulbous oesophagus (Fig. 1-3) and these infected 21 (30.0%) of the geckos examined (Table 1). The parasites were small, slender or sac-like worms with thin membranous cuticular skin, which were thrown into folds and through which the internal organs were just visible (Fig. 1). They were identified as nematodes of *Thelandros* species belonging to the family Pharyngodonidae[8,9]. The worms had prominent tails, which tapered to the tip (Fig. 2 and 3). Most of the worms seen were gravid females (Fig. 1-3). Eggs which were squeezed out of the worms were found to be flattened on one side and convex

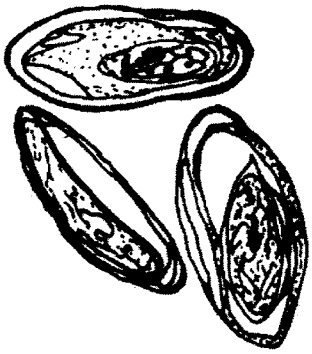

Fig. 4: *Thelandros* (ova)

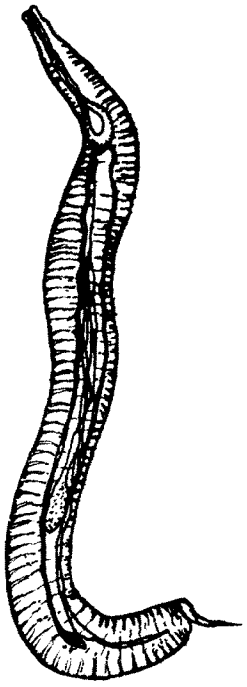

Fig. 5: *Thelandros* mule

on the other side, measuring 350×200 μm on the average (Fig. 4). Male organisms were rare. They were slender, smaller and had shorter tails when compared to the females (Fig. 5). The helminthes seen were, respectively similar in appearance to organisms identified after Petter and Quentin[8] as follows: *Thelandros bulbosus* (Fig. 1 and 2), *T. mule* (Fig. 5) and a *Strongyluris* species (Fig. 3 and 6). The genital cords of *T. bulbosus* organism seen were paired and unfolded, while the caudal alae of *T. mule* recovered, was not prominent. *Strongyluris* species seen were slender and had long esophagus (Fig. 3 and 6). Some spiny-headed worms were also found in the intestine of the gecko examined. These were however not described in this study.

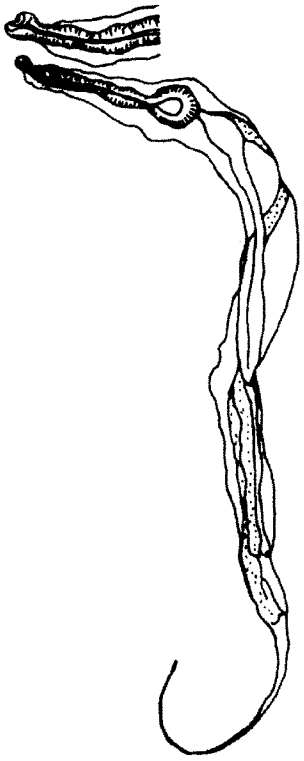

Fig. 6: *Strongyluris* spp.

DISCUSSION

Parasites of the wall-gecko as seen in this study, show many morphological similarities to some parasites that infect man and domestic animals. These reptilian helminthes could therefore provide easy experimental insight into similar parasites in medical and veterinary parasitology researches[9,11]. Of particular importance includes such studies in parasitic helminthology that may require postmortem examination of the host animal[9]. On the other hand, cases abound of human or mammalian infection with parasites of the lower, cold-blooded vertebrates[10]. Indeed families of the helminthes of gecko, which were identified in this report are not restricted to the reptiles. Some species of proteocephalid flatworms and pharyngodonid oxyuroids do actually attack mammals[2,8]. Experimental evidence had also shown specifically that helminthes of the gecko could develop in domestic mammals[2]. These indicate that parasites of the gecko are capable of development, at least, as a zoonosis or incidental infection of man and livestock. If it was established that the parasites of the gecko could infect man or livestock, then the co-existence of these vertebrates in their common domestic environment may

enhance exposure of man and livestock to infection risk with the gecko parasites.

It was also observed that termites were ingested by many of the geckos examined. Similarly, man and domestic birds in study area eat termites. These insects serve as food for the gecko, birds and man during their seasonal rhythmic emergence, soon after the first rains annually. This observation is important because certain groups of termites including those of the genus *Macrochodothermes* are vectors of nematode[10] and some parasites of the wall gecko had been reported to occur in the gut of termites[5]. It is therefore possible that termites ingested by the gecko, in this study, may act as a vector of transmission for the nematodes and even tapeworms seen in the reptile. This suggestion is important because helminthes in their host specificity tend to be restricted to animals with similar feeding and ecological habits[12]. On the other hand, it is possible that acarines of the gecko are the vectors, which transmit the tapeworms and nematodes of this reptile[1].

Other studies have shown that parasitic oxyuroids are very common in the caeca of lizards and they show morphological similarities to some parasites of other terrestrial vertebrates[8,13]. The genital and caudal apparatus of the respective parasites seen in this study were however not pronounced and so appeared structurally altered when compared with similar parasites of mammals[8]. However structural affinities, as seen in *Thelandros* species, are usually of considerable importance in the Phylogeny of the oxyuroids[10,11], suggesting an evolutionary linkage between the parasites of man and gecko. It has been confirmed that Acanthcephalans, as seen in this study, are common parasites of the intestine of cold-blooded vertebrates[14].

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