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The House Gecko (*Hemidactylus frenatus*) and Parasitaemia

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ABSTRACT

The house geckos (*Hemidactylus frenatus*) are unique among lizards. They are usually nocturnal and great climbers. They are found within human habitation where they feed on insects, worms and spiders. Like all vertebrates, they are susceptible to parasitism in their niche. This represents a substantial risk to human health. This however, informs this study. A total of 400 wall geckos were caught at night in randomly selected households within the study area in their hiding places. These were put into plastic bucket bottom lined with old newspaper to provide a near similar environment of their hideout, and taken to Biological Science laboratory for parasite examination. In ectoparasite infestation, an overall prevalence of 45.0% was recorded. Species infestation were as follows; *Ixodes* spp (61.1%), *Angasid* spp (27.8%), *Trombicula* spp and unidentified were 5.6% respectively, The sex related ectoparasitosis stood at, male (44.4%), females (50.0%) and juvenile (5.6%). In ectoparasitosis, the overall prevalence was 52.5%. The endoparasite infections were; *Parapharyngodon malplestomi* (33.3%), *Hedyris hanleyae* (23.8%), *Onchonistica javaensis* (23.8%) and unidentified spp (19.1%), while sex related species were males (47.6%), females (52.4%) and juvenile (0.00%). The endoparasites were of the groups, nematodes and cestodes. Geckos are likely zoonotic pathway to human health based on the parasites recovered in the study. Though they may look friendly in habits, but are quiet killers in transmission of pathogens.

Keywords: *Hemidactylus* spp, ectoparasites, endoparasites, parasitaemia, *Ixodes* spp, human health

1. Introduction

Geckos are lizards belonging to the infra order Gekkota found in warm climates throughout the world^[1]. They range in size from 1.6 cm to 60 cm in length. Unlike lizards, geckos are usually nocturnal and great climbers. They come in various patterns and colour and are among the most lizards in the world^[2]. According to Rogner^[3], a medium sized genus of about 20 species is found predominantly in Africa, the canary Island and the Middle East, but with a few species in Europe and Tropical America.

Geckos are unique among lizards in vocalization, making chirping sounds in social interactions with other geckos. The house gecko (*Hemidactylus frenatus*) is a native of South eastern Asia and Northern parts of Africa^[4]. They have been introduced to many other countries including Nigeria.

Hemidactylus frenatus is a well-adapted escape artist, managing to get out of the smallest space and taking advantage of any loss of concentration. These geckos are very close to human habitation where they feed on insects, worms and spiders. They are mainly in the ceiling, nooks and at the back of calendars during the day time but are active at night^[5]. They move with remarkable agility usually in search or pursuit of insect preys.

Like all vertebrates, geckos are susceptible to parasitism in their niche^[6]. Geckos are infested by ticks, mites and helminths. Direct and indirect contacts with geckos clearly represent a substantial risk to human health. This however, informs this study, to survey the ectoparasites and endoparasites of house gecko in the study area.

2. Materials and Methods**2.1 Study area**

The research was carried out in Uli, Ihiala Local Government Area of Anambra State, Nigeria. It is located between latitude 5.58–5.60°N and longitude 6.47–6.57°E. There is marked dry and rainy season from November – March and April – October respectively. This area is transverse by a number of streams which serve as main source of water supply for the inhabitants. They are mostly farmers, petty traders, few civil servants and students.

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2.2 Collection of samples

A total of 400 wall geckos were caught in randomly selected households within the town at different locations. These were under bright electric bulbs, back of picture frames and calendars on the walls during the day time. These were put in transparent plastic bucket with old newspaper at the base to provide a near similar environment for the wall gecko. The lid of the bucket was finely perforated for ventilation. This was transported to Biological Science laboratory of Anambra State University for parasitological examination.

2.3 Examination of geckos for parasites

The geckos used in the study were grouped into three; the males, females and juveniles. For ectoparasite examination, the skin of geckos was thoroughly examined with the help of handlens, and scalpel. The skin was gently scraped into a white tile placed in a wide mouth glass container bottom filled with normal saline. The scraps were gradually collected by bits on a clean slide and viewed

at x10 objectives. The observed parasites were separated into vials for identification. For endoparasites examination, the geckos were anesthetized with cotton wool soaked in ether and placed in airtight container for them to die gradually. The geckos were opened up, the organs were unraveled and separated into different Petri dishes with bottom filled normal saline. The organs were examined thoroughly. The observed parasites were separated into vials based on morphology for further identification.

2.4 Identification of parasites

The identification of parasites were based on the work of Kemp and Margret^[7] for ectoparasites, Cruz and Mills^[8] for endoparasites.

2.5 Statistical analysis

The data obtained in the study were analysed using Chi-square distribution.

3. Results

Table 1: The load of ectoparasites in the sampled wall geckos (*Hemidactylus frenatus*). Species of ectoparasites

Geckos	No examined	<i>Trombicula</i> spp	<i>Ixodes</i> spp	<i>Argasid</i> spp	Unidentified	Total
Male	170	5	55	20	0	80
Female	180	5	45	30	10	90
Juveniles	50	0	10	0	0	10
Total	400	10	110	50	10	180
		(5.6%)	(61.1%)	(27.8%)	(5.8%)	(45.0%)

The ectoparasite infestation on wall gecko were more of *Ixodes* spp (61.1%), followed by *Argasid* spp (27.8%). The hard tick load was

significantly different when compared with other ectoparasites ($P < 0.05$).

Table 2: The frequency of helminthes recovered from house geckos (*Hemidactylus frenatus*)

Geckos	No examined	<i>Parapharyngodon malplestoni</i>	<i>Hedruris hanleyae</i>	<i>Oochoristica javaensis</i>	Unidentified	Total
Male	170	25	30	35	10	100
Female	180	45	20	15	30	110
Juveniles	50	0	0	0	0	0
Total	400	70	50	50	40	210
		(33.3%)	(23.8%)	(23.8%)	(19.1%)	(52.5%)

Table 3: Assessment of parasite load in *Hemidactylus frenatus* in the study area

Geckos	Ectoparasite load	Endoparasite load	Total load
Male	80	100	180
Female	90	110	200
Juvenile	10	0	10
Total	180	210	390
	(46.1%)	(53.9%)	(97.5%)

The overall parasite load in *Hemidactylus frenatus* was 97.5%, while the ectoparasite and endoparasite load stood as 46.1% and 53.9% respectively.

4. Discussion

Geckos (*Hemidactylus frenatus*) are susceptible to both ectoparasite and endoparasite infestation. This was observed in the study. The parasite burden was more among adult males (46.2%) and adult females (51.3%), than the juveniles (2.5%), this supports the work of^[9, 10]. It however indicates that adult geckos occupy more favorable areas where they come in contact with the parasites and their vectors. The juvenile geckos perhaps were limited to suboptimal areas by older ones to avoid competition for preys. In the ectoparasite infestation, ticks; hard (50.0%) and soft (36.1%) were more prevalent than mites (5.6%) in the infested

Hemidactylus frenatus. This however, was in line with the findings of Amen^[11]. This might be that geckos have favorable skin cover for their attachment and feeding process as voracious blood feeders. The endoparasite infection in the study were more of nematodes and cestodes, this is in line with the findings of Ameh *et al*^[12]. This could be based on the feeding habits of the geckos which involved insect vectors of these parasites.

Apart from ectoparasites and endoparasites (helminthes) as was found in the study, geckos are linked with *Salmonella*^[13]. The geckos being found in human habitation shows that man can be infected through contaminated food and water by faeces and saliva of the reptile or accidentally ingesting the egg.

5. Conclusion

Geckos in human habitations, though they check insect pests by feeding on them, have been found to be harmful to man. This therefore, calls for health awareness campaign for war against geckos in human habitation. Furthermore, more studies on gecko-man association is advocated to find out the measures for their control.

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