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INTESTINAL PARASITES OF EDIBLE SNAILS (*ACHATINA* SPP) SOLD AT LOKOJA INTERNATIONAL MARKET, LOKOJA, KOGI STATE, NIGERIA

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ABSTRACT

A study on the prevalence of intestinal parasites of *Achatina* spp was carried out in the months of July to October 2014. A total of 100 edible snails were purchased from Lokoja International Market, Kogi state. Fifty male and fifty female; faecal floatation method was used for stools analysis. 40(40.0%) of these snails were infected by four (4) different intestinal parasites. Nematodes accounted for the highest number of parasites infection 37(37.0%). These Nematode species identified were *Strongyloides* spp and *Angiostrongylus cantonensis*, belonging to the family strongyloidae and metastrongyidae respectively. Trematodes (*Schistosoma mansoni*) infections identified 2(2.0%) and cestodes *Hymenolepis* spp 1(1.0%) of the snails examined. Statistically, chi-square was used for the analysis of results. There was no significant different between the intestinal parasites prevalence in relation to bodyweight and length ($P < 0.05$). But in the prevalence of intestinal parasites in relationship to sex of edible snails was significantly different ($P > 0.05$). It was concluded that these snails' intestinal parasites are zoonotic risk to man and some domestic animals, due to their morphological similarity to the human intestinal parasites.

Therefore, there should be proper cooking and handling of edible snails to prevent infection by intestinal parasites lodged in these snails.

Keywords: Edible snails, Intestinal parasites, Lokoja International Market, Kogistate

INTRODUCTION

Land snails belong to the *phylum mollusca* of class Gastropoda, subclass pulmonata and family Achatinidae which is the giant African land snail. These are non-conventional wild life protein source in Nigeria and some parts of Africa. Snail meat feature in the diets of urban and rural dwellers in the southern part of Nigeria usually served as delicacies (known as "Congo meat"), and occasionally for health consideration (Akinnusi, 1995). The same author stated that the main source of supply to the numerous consumers is from people who gathered wild snails from nearby bushes and sell along the roadside and in the local markets.

Many organisms are known to parasitise mollusks (Robert and Janovy, 2005). *Achatina fulica* has led to serious concerns about its role as a vector for metastrongylid worm *Angiostrongylus costaricensis* (Alicata, 1996). The exposure of land snails to contaminated habitats make them accessible to soil transmitted parasites hence the may source of transmission of these parasites to man if not properly cooked or handled; as well as other animals (Pipitgool *et al.*, 2000).

The objective of the study was to evaluate the prevalence and type of intestinal parasites of edible snail (*Achatina* spp) sold in Lokoja International market.

Materials and method

Study Area

A total of 100 snails were purchased from Lokoja International market and conveyed to the Zoology laboratory of Nasarawa State University, Keffi. Faecal floatation method was used for stool analysis based on technique of Zajac and Conboy, 2006. The body weight (g) and body length (cm) were recorded weekly for the period of study.

Data analysis

SPSS statistical software version 20 was used for chi-square analysis in the study.

RESULTS

Out of the one hundred (100) samples of *Achatina* spp examined 40(40.0%) of the Giant African Land Snails were infected with four (4) different helminthes parasites. Nematodes accounted for the highest number of helminthes infection 37(37.0%), followed by the Trematodes with recorded 12(2.0%) and Cestodes encountered 1(1.0%) of *Achatina* spp. examined; some small insects ingested were also noted in fecal materials of the edible snails. The total number of 40 intestinal parasites were found in the stool of the Giant African land snail (*Achatina* spp). The speeves of nematodes identified were *strongyloides* spp and *Angiostrongylus cantonensis*. Trematodes observed belong to the family Schistosomatidae, while the cestodes belong to family hymenolepididae.

Table 1 shows that nematodes (*Strongyloides* spp and *Angiostrongylus cantonensis*) accounted for the highest prevalence 37(37.0%) in the total number of *Achatina* spp examined. Trematodes (*Schistosoma mansoni*) was next accounted for 2(2.0%) and cestodes (*Hymenolepis* spp) accounted for 1(1.0%) infection rate respectively. There was no significant different between the intestinal parasites encountered in *Achatina* spp.

Table 1: Prevalence and type of Intestinal Parasites of *Achatina* spp encountered

Group of Parasites	No. Male Infected	No. Female Infected	Total No. (%) Infected Snails
Trematodes			
(<i>Schistosoma mansoni</i>)	1	1	2(2.0)
Cestodes			
(<i>Hymenolepis</i> spp)	1	0	1(1.0)
Nematodes			
(<i>Strongyloides</i> spp and <i>Angiostrongylus cantonensis</i>)	28	9	37(37.0)
Total	30	10	40(40%)

$\chi^2_{cal} = 1.48$, $\chi^2_{tab} = 5.99$ at $df = 2$, $p < 0.05$.

Table 2 shows that out of 50 males of *Achatina* spp (giant African snail) examined, 30(60.0%) were infected with intestinal parasites. 50 females were examined and 10(20.0%) of them were infected. The total number of male and female infected was seen to be 40(80.0%). There was significant difference between intestinal parasites encountered of *Achatina* spp in relation to the sexes.

Table 2: Prevalence of Intestinal Parasites in Relation to Sexes of *Achatina* spp.

Sex of Snail	No. Examined	No. infected	% infected
Male	50	30	60.0
Female	50	10	20.0
Total	100	40	40.0

$\chi^2_{cal} = 10.00$, $\chi^2_{tab} = 3.84$ at $df = 1$ and $P > 0.05$.

Table 3 shows that out of one hundred (100) snails (*Achatina* spp) examined, the highest prevalence were seen in the snails with body weight ranging (360-379)g with infection rate at 13(52.0%) and the least were seen in body weight (200-219)g and (220-239)g with infection rate of 0(0.0%) and 1(33.3) respectively. There was no significant difference between the infected snails and body weight of the snails.

Table 3: Prevalence of Intestinal Parasites in Relation to body weight of *Achatina* spp

Body weight(g)	No. Examined	No. Infected	%infected
200-219	3	0	0.0
220-239	3	1	33.3
240-239	6	3	37.5
260-279	8	2	25.0
280-299	9	3	33.3
300-319	7	3	42.9
320-339	7	2	28.9
340-359	12	3	25.0
360-379	25	13	52.0
380-399	8	5	62.5
400-419	10	5	50.0
Total	100	40	40.0

Table 4 shows that out of the one hundred (100) snails (*Achatina* spp) examined, the highest prevalence were seen in snails with the body length (19.0-19.9) cm with infection rate 13(52.0%) and the lowest were seen in snails with the body length ranging (12.0-12.9)cm and (13-13.9)cm with infected rate at 0(0%) and 1(25.0%). There was no significant difference between the infected snails in relation to their body length.

Table 1: Prevalence of Intestinal Parasites in relation to body length of Achatina spp

Length (cm)	No. Examined	No. Infected	% Infected
1.0-1.9	1	0	0.00
1.0-1.9	8	1	25.0
1.0-1.9	8	2	25.0
1.0-1.9	9	3	37.0
1.0-1.9	8	3	33.3
1.0-1.9	15	4	50.0
1.0-1.9	25	4	26.7
1.0-1.9	10	13	52.7
1.0-1.9	10	5	50.0
Total	100	5	50.0
		40	40.0

DISCUSSION

The findings showed a relatively higher prevalence of intestinal parasites (helminthes) in the study area. The overall prevalence was 40% with Nematodes infecting 37%, Trematodes 2% and Cestodes 1%. The species are not restricted to Achatina spp alone; some do actually attack mammals. This is in agreement with the work of Amadi *et al* (2010) who examined 70 snails in parts of the Niger Delta which were infected with 28% Nematodes, Trematodes 3% and Cestodes 2%. In this study, the sexes in relation to parasites were recorded. Out of 100 species which were examined 50 males and 50 females: 60% male snails and 20% female snails were infected with intestinal parasites. This suggests that the result from the male provide a more accurate representation of the true occurrence of the parasites observed. This is in agreement with Isomursu *et al.* (2006) findings who examined 80 snails out of which 40 were males and 40 females. The males were infected with 34% and females 20% of intestinal parasites encountered in the snails. The same author found infection of individual snails in relation to body size to be higher in larger size snails than those with small body size. Therefore, snail intestinal parasites are risk to man and domestic animals. Out of 30 snails examined, 33.3% were infected and are within the ranges of 370-400g while for the length of the body as reported by Schotman (1998). The snails with longer length have the highest prevalence ranging from 20-27cm out of the 20 which were examined 12 of them were found to be infected by intestinal parasites. In this study, the body weight with the highest prevalence observed within the ranges 360-370g with percentage range of 52%. For the body length, the highest prevalence where seen within the ranges 19.0-19.9cm with percentage rate of 52%.

In conclusion, the finding of this study indicates that intestinal parasites infection has low prevalence in the Achatina spp purchases at Lokoja international market. Although it is confirmed that giant African snails are vectors of intestinal parasites due to their habitats. There is need for establishment of health program for the control of intestinal parasites in this area, also good personal hygiene and proper cooking of snail meat must be encouraged to prevent infection by intestinal parasites.

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