

Research Paper

A Survey of Gastrointestinal Parasites of Pigs that Arrived for Slaughter at Bodija Abattoir, Ibadan, Oyo State, Nigeria

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Abstract: A study was carried out to evaluate the prevalence of gastrointestinal parasites in pigs slaughtered at Bodija Abattoir, Ibadan, Oyo State. Faecal samples were aseptically and randomly collected from the ani of 101 pigs between April and July, 2013. The samples were preserved using 10% formalin pending the analysis. At the end of collections, they were subjected to laboratory faecal analysis for ova and oocysts/cysts. All data collected were subjected to descriptive and inferential statistics for prevalence determination. The results showed that 33 (32.67%) out of 101 pigs were infested by gastrointestinal parasites. The prevalence also revealed that boars 17 (17%) had higher prevalence than sows 16 (16%). The four species of parasites identified showed prevalences of 20.79%, 9.90%, 0.99% and 0.99% for *Isoospora suis*, *Oesophagostomum dentatum*, *Trichuris suis* and *Metastrongylus salini* respectively. The results also showed a sex prevalence of 16.83% (17 boars) and 15.84% (16 sows) which was not statistically different ($P>0.05$). This study provides information on the gastrointestinal parasitism status of pigs that arrived for slaughter at Bodija Abattoir, Ibadan, and calls for more preventive/control measures to stamp out gastrointestinal parasites to enhance more wholesome pork for the general public.

Keywords: Pigs, prevalence, gastrointestinal parasites, sex distribution, Bodija Abattoir.

Introduction

Nigeria is located in tropical Africa, an area that is described as “parasites’ paradise” (Olso, 2000). Environmental factors and vector abundance have been incriminated in the distribution of most parasitic diseases. The continuous drive to increase meat production for the protein needs of the ever increasing world population has some parasitological problems attached (Boes *et al.*, 2000; Steenhard *et al.*, 2000). The sustainable development of the swine industry is faced with a number of constraints among which are the diseases caused by intestinal parasites (Aliaga-Leyton *et al.*, 2011). Gastrointestinal parasites are responsible for a substantial loss of productivity in swine and other livestock industry. Gastrointestinal parasitism in swine affect swine’s performance in terms of efficient feed conversion, poor growth rate, reduced weight gain and the condemnation of affected organs after slaughter (Nsoso *et al.*, 2000). They constitute a major impediment to efficient and profitable livestock production (Joachim *et al.*, 2001). In Nigeria, livestock production sector is vital not only because of its economic benefits but because over 80% of the population are involved in one way or the other in agriculture (Otuma and Uchewa, 2009). Several studies on gastrointestinal parasites of pigs have been carried out in Nigeria and beyond. In a study investigated among 271 pigs by Sowemimo *et al.* (2012) for gastrointestinal parasites in Ibadan, Nigeria, five species of parasites were implicated including *Trichuris suis*, *Ascaris suum*, *Ancylostoma duodenale*, *Necator americanus* and *Stephanurus dentatus*. Tamboura *et al.* (2006) in a study conducted among 383 pigs for parasitic infections in eastern center province, Burkina Faso, reported that 91% of the pigs were infected with one or more parasites with *Ascaris suum* the most prevalent (40%). Parasites of pigs and their potential to infect humans have recently become major issues among the public (Oslo and Guselle, 2000). Although studies have been conducted on the intestinal helminthes of pigs in parts of Nigeria, little information is available regarding the parasitic infections in Ibadan. This study was intended to investigate the prevalence of gastrointestinal parasites in pigs slaughtered at Bodija abattoir, Ibadan, Oyo State, Nigeria.

Materials and Methods

Study Area

This study was carried out at the Bodija abattoir; the largest abattoir in Ibadan, Oyo state. Ibadan is the largest indigenous city in tropical Africa. It lies within longitude 07⁰02¹ and 07⁰40E and latitude 03⁰35¹ and 4⁰10¹N. Ibadan is 128km northwest of Lagos and 345km southwest of Abuja, the Federal Capital Territory (Udo, 1994).

Faecal Samples Collection and Preservation

Faecal samples were randomly collected from the rectum of 101 pigs into a labelled clean sterile 30ml bottles using a long forceps. The faecal samples collection took place between April and July, 2013 (12 weeks). The faecal samples collected were then transported to the parasitology laboratory of the Department of Veterinary Medicine, University of Ibadan, Ibadan, where they were preserved with 10% formalin before analysis.

Parasitological Analysis

The preserved faecal samples were processed using the Kato-Katz technique as described by Cheesbrough (1998) and later examined under the light microscope at X10 objective lens for the presence of protozoan cysts/oocysts and helminth ova. A drop of iodine was run over the preserved specimen and viewed under X40 objective lens for species cysts/oocysts and ova identification. These were identified based on structural and morphometric criteria (Cheesbrough, 1998).

Statistical Analysis

Descriptive and inferential statistics were used to analyse the data. Overall prevalence and species prevalence were analysed using descriptive statistics while the difference in prevalence of parasite infections in relation to sex was tested using the Chi-Square (X^2) tests.

Results and Discussion

Out of 101 pigs investigated for intestinal parasites, 33 were infected, giving an overall prevalence of 32.67% (Table 1). Four species of gastrointestinal parasites were identified comprising one protozoan and three nematodes. Overall species prevalence was 9.90% for *Oesophagostomum dentatum* while *Trichuris suis* and *Metastrongylus salini* had a prevalence of 0.99% each. *Isospora suis*, the only protozoan parasite encountered, had the highest prevalence of 20.79% (Table 2). The prevalence of gastrointestinal parasites was higher in boars 17 (16.83%) than in sows 16 (15.84%) ($X^2 = 2.4863$, $df = 1$, $P > 0.05$), (Table 3). The prevalence of *Oesophagostomum dentatum* was higher in boars 6 (5.94%) than in sows 4 (3.96%) while *Isospora suis* was more prevalent in sows 12 (11.88%) than in boars 9 (8.91%). However, *Trichuris suis* and *Metastrongylus salini* had a prevalence of 0.99% in boars and 0% in sows respectively (Table 4). This study revealed that the overall prevalence of gastrointestinal parasites recorded among 101 pigs that arrived for slaughter at Bodija abattoir, Ibadan was 32.67%. This prevalence was lower than 38.8% reported in Ibadan by Sowemimo *et al.* (2012) and 100% reported in Umuahia, Abia State by Nwoha and Ekwurike (2011) as well as the 91% reported by Tamboura *et al.* (2006) in Burkina Faso. The lower prevalence of intestinal parasites recorded in this study could be as a result of effective management at the source farm(s), such as daily cleaning and disinfection of pens, giving high quality commercial feed and the use of effective anthelmintic drugs at the right time. In this study, four species of intestinal parasites were encountered compared to five species reported from 271 pigs in Ibadan, Oyo State by Sowemimo *et al.* (2012). Three nematode species were identified in this study and they include *Oesophagostomum dentatum*, *Trichuris suis* and *Metastrongylus salini* and one protozoan parasite *Isospora suis*. *Isospora suis* was revealed to be the most prevalent parasite. This contrasts the findings of Kumar *et al.* (2002), Ngozi *et al.* (2004) and Tamboura *et al.* (2006), where *Acsaris suum* was the most prevalent parasite and Sowemimo *et al.* (2012), where *T. suis* was the most prevalent. The prevalence of *I. suis* (20.79%) was also lower than the 26.4% reported for *I. suis* in Ontario Canada (Aliaga-Leyton *et al.*, 2011) and 27.8% from Poland (Karamon *et al.*, 2007). The high prevalence of *Isospora suis* could probably be due to the ability of the cysts/oocysts to survive for long in the environment (Pittman *et al.*, 2010). In this study, the prevalence of intestinal parasites was found higher among boars than in sows. This is in agreement with the findings of Nsoso *et al.* (2000), Kumar *et al.* (2002) and Sowemimo *et al.* (2012). However, Tamboura *et al.* (2006) reported higher prevalence among sows than in boars.

Conclusion

Studies have shown that there is the possibility of pigs acting as transport host for human parasites. This study revealed that pig faeces could be an important source of some parasites capable of infecting humans. Further investigations should be carried out to determine the impact of parasitic infections of pigs on public health in Nigeria.

Table 1: Prevalence of gastrointestinal parasites of pigs in the study area

Number Examined	Number Infected (%)
101	33 (32.67)

Table 2: Species prevalence of gastrointestinal parasites of pigs in the study area

Species	Number infected (%)
<i>Isospora suis</i>	21 (20.79)
<i>Oesophagostomum dentatum</i>	10 (9.90)
<i>Trichuris suis</i>	01 (0.99)
<i>Metastrongylus salini</i>	01 (0.99)
Total	33 (32.67)

Table 3: Sex distribution of gastrointestinal parasites of pigs in the study area

Sex	Number Examined	Number infected (%)
Boars (Males)	63	17 (16.83)
Sows (Females)	38	16 (15.84)
Total	101	33 (32.67)

Table 4: Prevalence of gastrointestinal parasites of pigs in relation to sex and parasite species

Parasite species	Number of Bucks infected (%)	Number of Sows infected (%)	Total Number infected (%)
<i>Isospora suis</i>	9 (8.91)	12 (11.88)	21(20.79)
<i>Oesophagostomum dentatum</i>	6 (5.94)	4 (3.96)	10 (9.90)
<i>Trichuris suis</i>	1 (0.99)	0 (0.0)	1 (0.99)
<i>Metastrongylus salini</i>	1 (0.99)	0 (0.0)	1 (0.99)
Total	17 (16.83)	16 (15.84)	33 (32.67)

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