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Gastro-intestinal Parasites of Pigs in some parts of Wukari, Taraba State, North-Eastern Nigeria

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Abstract

A study was conducted to determine the prevalence of gastrointestinal parasites infection of pigs (*Sus scrofa*) in some parts of Wukari, Taraba State, Nigeria. Faecal samples were collected from 305 pigs comprising 140 males and 165 females from five locations within Wukari. The samples were examined for helminthe eggs and protozoan oocyst using floatation and sedimentation techniques. Of the 305 pigs examined, 238(78.03%) were found to be infected with the parasites. In order of abundance of the parasites, *Ascaris suum* occurred more (66.56%) followed by *Trichuris suis* (9.84%) and *Eimeria sp* (1.64%). With respect to breed, the Large white 183(91.04%) pigs were found to harbour more of parasites with the highest number of infection than the mixed breed, 55(52.88%). Of the 140 male pigs examined, were infected 98 (70.00%) while of the 165 female pigs 140 (84.84%) were infected. Baconers (7-8 months old) were more susceptible (85.71%) to parasitic infection, than the Adults (9-months and above) 77.27% when compared to the Pokers (70.00%) 5-6 months old. Statistical analysis showed that the infection rate between sexes of pigs differed significantly ($P<0.05$). Chi-Square analysis showed that the infection between breeds also varied significantly ($P<0.05$). Strategies intended to mitigate the intestinal parasitic infections of pigs in Wukari should take into account the identified intestinal parasite species.

Key words: *Ascaris suum*, *Trichuris suis*, *Eimeria sp*, *Sus scrofa*, Wukari.

Introduction

Pigs, *Sus scrofa* serve as meat (pork) and source of protein in different parts of the world. There is a growing demand for this protein to meet the nutritional requirement of humans which has triggered the rearing of pigs in some part of Nigeria especially in Wukari to meet the need of her teeming population as well as for economic gains. Apart from this, traditionally, pig farming has been practised in Nigeria as a way of life of peasant farmers. With the present high rate of unemployment however, more people have taken to pig farming as a source of livelihood as it has proved to be a profitable venture. Also, as an added source of income for low-income earners.

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However, intestinal parasitic infection of pigs and its significant involvement in zoonosis that is of public health importance are some of the factors that act as impediment towards achieving this goal. Intestinal helminthes are from old known to be of economic importance in porcine practice and related fields with their effects ranging from poor growth, unthriftness, diarrhoea, anaemia and death [1], [2].

Pigs are primarily scavengers [3], utilizing food scraps thrown away by people. The roaming of pigs favours the uptake of intestinal parasite eggs [4], making the pigs particularly susceptible to infection with intestinal parasites. Earlier, [5] reported that intestinal helminthes reduce average daily weight gain by up to 30% in indigenous pigs of all ages. The adult nematodes live in the intestines, feeding on the gut lining and ingesting particulate and liquid digester, thus limiting nutrient uptake by the pigs. The damage caused by adult intestinal parasites includes hemorrhagic gastroenteritis and anaemia. Larval migration through tissues of the pigs results in spread of infectious organisms from the gut as well as extensive tissue damage thus compromising organ function [6]. The local pigs have been demonstrated to be less susceptible to endoparasites than exotic breeds [7].

Seeing that losses of pigs due to intestinal parasites are enormous, it is important therefore to carry out an investigation on the prevalence of intestinal parasites of pigs which will provide a base line data and help in formulating development and extension programmes for communal/local farmers in parts of Wukari Local Government Area. In addition, knowledge of the occurrence of particular parasite species enables the veterinary services to understand possible public health threats and develop prophylactic measures to reduce the parasite prevalence among pig herds. Therefore, this study was aimed at identifying and determining prevalence of gastrointestinal parasites of pigs in some parts of Wukari, since pigs are only farmed and slaughtered in selected areas due to religious constraint.

Methodology

Study Area

The study was conducted in Wukari Local Government Area of Taraba State, Nigeria. Wukari is situated in Southern Taraba. Taraba State is geographically situated in the Northern Guinea Savannah vegetation belt and has an annual rainfall of about 150mm-200mm with a mean temperature of 25^{o}C and maximum temperature of 38^{o}C (Taraba State Government Diary, 2010). The total land area is about 60,291.82sqkm and lies within Latitude 6^{o}30' N and 9^{o}36' N and Longitude 9^{o}10' E and 9^{0}50' E.

Study Sites

The study site included Wukari Abattoir 2km South of Kwararafa University Wukari, Adjiduku Ward, Angwan East, Mission Quarters and Rice Mill Area (RMA) all within Wukari metropolis. The method of husbandry adopted by the farmers in these areas was the traditional type (semi-intensive).

Collection and Examination of Sample

A total of 305 faecal samples of pigs were collected and examined. The faecal samples were collected immediately the pig defecates in the presence of the researcher and directly from the rectum by rectal palpation. The faecal samples were placed in a clean pre-labelled specimen bottles and transported to the Parasitology laboratory of the Kwararafa University, Wukari for analysis within 24hrs. A separate disposable glove and specimen bottles were used for each animal sampled. The pig's identification, age, sex and breed were obtained while samples were being collected. The stool samples were examined using the Formol-ether concentration technique of [8] at the Parasitology Laboratory of the Kwararafa University, Wukari.

Processing of samples

A small quantity of each sample was placed on a clean microscope slide with a glass rod to make a

normal smear. A drop of 1% normal saline was then placed on the smear, a glass cover slip was gently placed on the slide which was then mounted on the microscope and examined under the low power magnification for identification of parasites as described by [9 and 10].

Identification of parasites

Parasites were observed using microscope and keys from [11] was used for identification.

Statistical analysis

The proportions obtained in the study were compared using chi-square test. The confidence level for the analysis was set at 95%, and the level of significance at $p<0.05$.

Results

A total of 305 faecal samples were collected from pigs and examined during the study period. More than half of the total sample collected, which is 238(78.03%) were found to be infected with intestinal parasites. In order of infection prevalence, *Ascaris suum* alone had the highest infection rate 203(66.56%) followed by *Trichuris suis* 30(9.84%) and *Eimeria sp* had the lowest infection of 5(54.96%), Table 1.

The prevalence of intestinal parasites with respect to age showed high infection rate in Baconers, 85.71% than Adults, 77.27% followed by porkers who had the lowest infection rate of 70.00% Table 2.

Table 3 presented an overall occurrence of parasites in relation to sex. Infection rate was highest in female (Sow), 84.84% than the male (Boar), 70.00%. Table 4 showed breed-related prevalence of intestinal parasites of pigs. The large white was observed to be more infected with the parasites (91.04%) than the mixed breed (52.88%).

Table 1: Overall Prevalence of Intestinal Parasites of Pigs encountered during the study

Parasites (%)	Number Examined	Number Infected	Infection Rate
Ascaris suum	305	203	66.56
Trichuris suis	305	30	9.84
Eimeria sp	305	5	1.64
Total	**305**	**238**	**78.03**

$P<0.05$ $\chi^2 = 4.890$ df = 2

Table 2: Age-Related Prevalence of gastro-intestinal Parasites of Pigs encountered during the study

Age	Number Examined	Number Infected	Infection (%) Rate
Porker (5-6 months old)	90	63	70.00
Baconers (7-8 months old)	105	90	85.71
Adult (9-above)	110	85	77.27
Total	**305**	**238**	

$P<0.05$ $\chi^2 = 0.9353$ df = 2

Table 3: Sex- Related Prevalence of Intestinal Parasites of Pigs encountered during the study

Sex	Number Examined	Number Infected	Infection (%) Rate
Sows (Female)	165	140	84.84
Boars (Male)	140	98	70.00
Total	**305**	**238**	

$P<0.05$ $\chi^2 = 3.841$ df = 1

Table 4: Breed-Related Prevalence of gastro-intestinal Parasites of Pigs encountered during the study

Sex	Number Examined	Number Infected	Infection (%) Rate
Sows (Female)	165	140	84.84
Boars (Male)	140	98	70.00
Total	**305**	**238**	

$P<0.05$ $\chi^2 = 3.841$ df = 1

Discussion

In this study, it was evident that gastrointestinal parasites infection was high in pigs. This is an indication that the favourable environmental condition promotes the survival and development of pre-infective stages of the parasites as well as the limited veterinary care of the pigs [12].

The persistent high humidity resulting from rainfall satisfies the optimum environmental requirement needed for the development of parasites eggs and also ensures a prolonged survival of larvae in the soil which increases the possibility of host infection. The feeding habit of pigs could also contribute to the high level of parasitic infection as variously reported [2], [5], [13], [14]. During the study, it was observed that poor management practices was a factor that could also contribute to high infection rate and this was evident in the faecal material that was allowed to accumulate and remain accessible to the pigs.

Ascaris suum was the most prevalent among the parasites encountered during this study. The low prevalence of *Trichuris* and *Eimeria* species was not surprising as this can be attributed to the existence of acquired immunity by the pigs. This is in keeping with the study by [5] who observed that, out of 97% of pigs that excrete parasitic eggs, interestingly, 90% were found to excrete *Ascaris suum*. Similarly, [15] presented a similar result of high prevalence of *Ascaris suum* (60%) while [4] attributed the high prevalence *Ascaris suum* to differences in breed and production systems. The low prevalence of *Trichuris* and *Eimeria* is in agreement with earlier studies [5] and [15].

With respect to sex, female pigs were more infected than the male host. This might be due to the fact that female pigs feed more during the care of their new born offspring where they can easily pick up the infective stages of these parasites. Similarly, some authors [13], [14] and [17] reported that female pigs are highly susceptible to intestinal parasites than the male animal.

The infection was higher among the Baconers than the adult hosts and porkers were the least infected animals. This finding conformed to the report by [5] and [18] who reported that adults and baconers were more infected by intestinal parasites than the porkers. This might be due to much care and care given to porkers than the adults and baconers who are often left to roam and fane for themselves predisposing them to infective stages of these parasites. Large white had higher infection than the mixed breed in this study. This could be attributed to the economic value placed on the mixed breed by the owners. In an interview, farmers noted the higher economic value of the mixed breed which could be the reason for the care provided to meet demands. This was suggested by some author [19].

Cross-infections of *Ascaris suum* in human host are possible as pigs appear to act as reservoir hosts for disseminating human ascariasis which are of public health significance [20]. However this study suggested that in a community setting, where pigs are reared and pork meat is consumed, a large section of the population in such area could be significantly involved in Zoonotic helminthiasis.

The overall result indicated that three species of intestinal parasites commonly infect pigs in the study area. However, the infected animals (Pigs) appear to be healthy. This suggested that helminthes control measures for pigs should be concentrated on the dominant parasite species.

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