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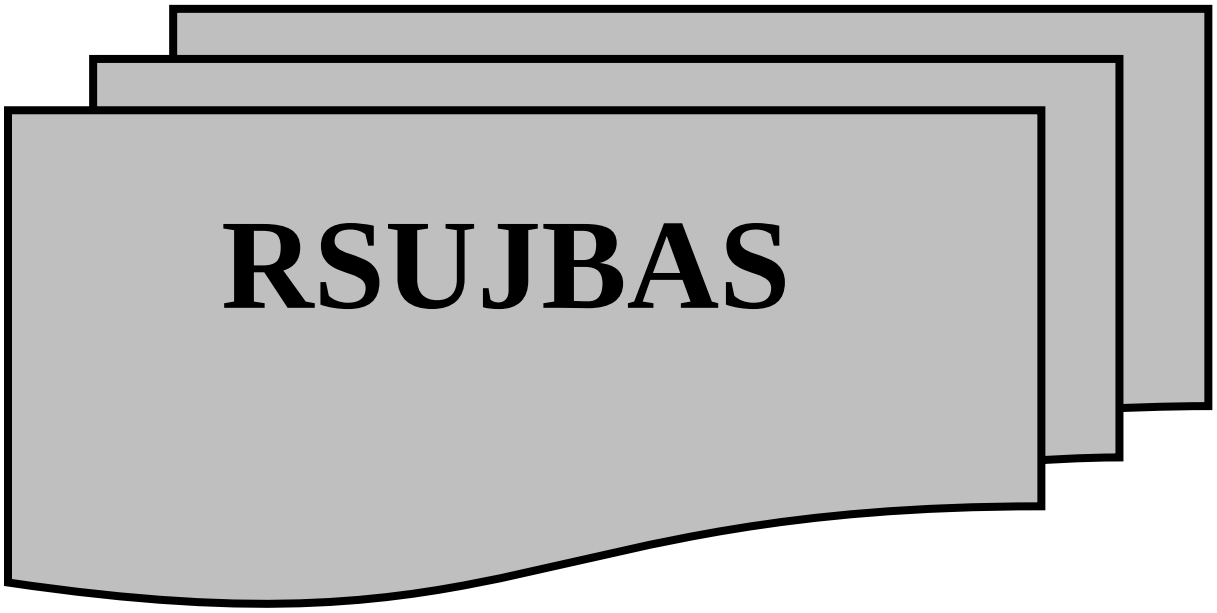

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STUDY ON TRYPANOSOMIASIS AMONG CATTLE REARED IN SELECTED PERI-URBAN AREAS IN OSHIMILI NORTH AND SOUTH LOCAL GOVERNMENT AREAS OF DELTA STATE, NIGERIA.

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ABSTRACT:
Prevalence of trypanosomiasis among cattle reared in selected peri-urban areas in Oshimili North and South local government areas of Delta State, Nigeria was studied. Five millimeters of blood samples were collected from jugular vein into bijou bottles and stored in ice packed boxes. The collected bloods samples were quickly transported to the Nigerian Institute for Trypanosomiasis Research Laboratory Asaba, for parasitological analysis. Wet, thin, thick films, haematocrit centrifugation technique and buffy coat methods were used to detect trypanosomes in the Jugular blood of the animals. The Packed Cell Volume (PCV) was also determined. A total of 97 cattle was examined, 37 were from grazing cattle while 60 were from exotic cattle brought from other parts of the country for slaughter. Infection rate for the grazing cattle was 0% while exotic cattle was 3.35. The PCV value of the grazing cattle did not show any significant difference (P=0.05) from those animals at slaughter. Mean PCV of infected cattle 21.33% against uninfected cattle 36.8%. Preliminarily identified as Trypanosoma vivax. Based on the sample size of the animals screened, cattle in the two LGAs appears to be grazing areas that are trypanosomiasis and tsetse fly free. Nevertheless, presence of infection in animals brought in for slaughter predisposes other livestock in the area to risk of animal trypanosomiasis.

KEY WORDS:
Prevalence, cattle reared, Peri-urban..

INTRODUCTION
Food production and food value chain system are likely to undergo significant adjustment processes as poverty becomes increasingly urbanized (Herrero et al., 2010; Buhand & Urdal, 2013; Brend'Amour et al., 2017), as the demand for urban food will grow, and as cities exert greater influence on Peri-urban and rural livelihoods and the environment (Buhand & Urdal, 2013). As a result, the impact of urbanization on crop and livestock production system and their implications for food security are increasingly recognized at international and national

levels as key components of sustainable development (Sonnino, 2016; Szabo, 2016). Livestock production, the largest land use sector worldwide, is an important part of this scene. Under rapid urbanization dynamics, livestock production will inevitably play an instrumental role in achieving sustainable food security in developing countries (Godbar & Wall, 2014). Livestock Source Food (LSF) and other animal products account for approximately one-third of global human protein consumption (Popp et al., 2010). The global livestock sectors contribute to the livelihoods of around one billion of the poorest people in the world and employs close to one billion persons (Hurst et al., 2005). The livestock are also prone to attack of pathogenic organisms, of which trypanosomiasis is one, especially in sub-Shara Africa.

Trypanosomiasis has direct impact on livestock productivity, it reduces meat and milk off take by 20% (Samdi et al., (2010), calf mortality by 20% (Samdi et al., 2010),it decreases both lamping and kidding rates in sheep and goat respectively (Samdi et al., 2010) and livestock management especially the number of livestock kept by farmers. (Samdi et al., 2010). Animal trypanosomiasis reduces work efficiency of oxen for cultivation, reducing access to animal traction or discourages the introduction of drought animals into crop farming (Omotainse et al.,2004).

Tsetse flies (*Glossina* sp.) are the main vectors of trypanosomes protozoan parasites that cause Human African Trypanosomiasis (HAT) and Animal African Trypanosomiasis (AAT) in livestock in sub-Saharan Africa. However, the HAT cases are on the decline since the turn of the 21st century; below 10,000 cases per year (Simarro et al., 2011). However, AAT remains endemic in several countries including Nigeria (Franco et al., 2014). AAT is resulting in annual losses of approximately 5 million US Dollars due to restricted agricultural development and livestock production (Swallow, 2000). The disease thus poses a big socioeconomic burden on sub-Saharan African countries. Trypanosomes rely on tsetse flies as vectors during their infectious life cycle, where they develop into mammalian infective forms (Ravel et al., 2007).

The aim of this study was to examine the prevalence of trypanosomes in cattle reared in Peri-urban. The objectives of the study were to identify trypanosome species in the blood of the slaughtered cattle in selected abattoirs and create awareness of the dangers of the disease in cattle.

MATERIALS AND METHODS

Study Area

The study areas were Ibusa (Latitude 6^0.18′04′′ N and Longitude 6^0.62′64″ E) in Oshimili North, Anwai (Latitude 6^0.25′20″ N and Longitude 6^0.70′26″) and Asaba (Latitude 6^0.20′59′′ N and Longitude 6^0.69′59″ E) the state capital in Oshimili South Local Government Area of Delta State.

Sample Collection

A total of 97 cattle was sampled. Five millilitres of blood was collected from the Jugular vein at point of slaughtering, into bijou bottles containing one millilitre grain powder of Ethylene Diamine Tetra Acetate (EDTA) per millilitre of blood. The blood samples were kept cool in a flask containing ice packs, and were transported to Nigerian Institute for Trypanosomiasis and

Onchocerciasis Research Laboratory Asaba Delta State, for parasitological examinations. Physical examination of cattle on arrival at slaughter was carried out.

Parasitological Examination Parasitological examination was done in the laboratory using the Hematocrit Centrifugation Technique (HCF) where capillary tubes were filled up to $^{2}/_{3rd}$ with blood and centrifuged to concentrate the parasites (Ifeorah et al., 2017). Buffy Coat Method (BCM), here the parasites are located and identify within the buffy coat region and Giemsa stained thin films smears were made. Stained with Giemsa and view under an oil immersion field. The packed cell volume (PCV) of each arrival was also determined using a hematocrit reader. Trypanosome species were identified based on their motility and morphological structures from Giemsa stained films.

RESULTS

The overall prevalence of *T.vivax* infection examined during the study is shown in Table 1. A total of 97 blood samples were collected from white Fulani breed of cattle and screened. In Ibusa, Oshimili North 16 grazing cattle were screened, 4 males and 1 female, non was infected. In Anwai, Oshimili South, 21 grazing cattle were screened, 7 males and 14 females but all were negative, no infection recorded. In Asaba, Oshimili South, animals transported from other parts of the country to Asaba for sale, out of the 60 animals screened, two were infected with trypanosomiasis, which also showed in their packed cell volume (PCV).

Table 1: Prevalence of Trypanosomiasis in slaughtered cattle in the study area

Location	Type of herd	No. screened	male	female	No. positive (%)	HCT	Wet film	Thin film
Ibusa (Oshimili North)	Grazing	16	4	12	0	-ve	-ve	-ve
Anwai (Oshimili South)	Grazing	21	7	14	0	-ve	-ve	-ve
Asaba (Oshimili South)	Transported for sale	60	59	1	2[3.3%]	+ve	+ve	+ve
Total		97	70	27	2(2.1%)	-	-	-

Table 2: Packed Cell Volume PCV% Range of Screened Animals

Range	10-19%		20-29%		30-39%		40-49%	
Location	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Cattle at Ibusa (Oshimili North)	**0**	**0**	**3**	**6**	**2**	**5**	**0**	**0**
Cattle at Anwai (Oshimili South)	**0**	**0**	**2**	**4**	**6**	**6**	**0**	**1**
Transported cattle into Asaba	**0**	**0**	**5**	**1**	**22**	**0**	**28**	**4**

DISCUSSION

The overall prevalence showed in Table 1. 3.3% infection rate with *T.vivax* among the arrivals at slaughter recorded in this study is not surprising, because it agrees with the work of Samdi et al. (2011) who noted infections in abattoir animals of similar prevalence range (2.2%) elsewhere in Kaduna State. However, Kalu & Uzoigwe (2001); Okweluma et all. (2011) reported higher infection rate of 34.5% and 20.5% in domestic herd in tsetse fly and trypanosome endemic areas in Central Nigeria.

Table 1 showed that none of the sample collected from the grazing animals was infected. This probably could be as a result of treatment of animals with trypanocids or possibly the grazing areas are free of tsetse fly and other biting flies capable of mechanical transmission. It is also possible that the area is trypanosome free.

The PCV values of the grazing Cattle did not show any significant difference (P:< 0.05) from those animals at slaughter, except for a few blood samples (Table 2). The PCVs of all animals screened were within the normal range of bovine value (24% - 46%) except the two infected. Similarly, infected animals fall within the PCV range of (28-31%) has been reported in Ethiopia (Eyasu & Ahmed, 2013). This finding corroborates with that of Ezeokonkwo et al. (2012) with respect to single infection, *T.congolence* infection showed a comparatively lower hematocrit value. This further indicates that the group of animals screened were either not under stress of haemoparasitic infections or they are under proper treatment regime.

CONCLUSION:

From our observation, the absence of trypanosome infection in grazing animals in the Local Government Areas is probably an indication that the animals are grazing in tsetse fly and trypanosome free areas. However, trypanosome infection in animals brought outside the state, poses great danger to home livestock due to mechanically transmitting insect and stray tsetse fly in the area.

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