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A survey on tick species infesting domestic birds sold at Sokoto central market, Nigeria

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Abstract
A Survey on tick species of domestic birds was carried out at Sokoto Market between August and November, 2007. A total of 450 domestic birds, 150 each of chickens, guinea fowls and pigeons were examined for the presence of ticks. Out of

these 135 (30%) were found infested. 90 (60%) of which were chickens, 45 (30%) were guinea fowls and none of the pigeons were infested. In all 89 ticks were isolated, 61(68%) from chickens and 28(33.3%) from guinea fowls. Out of the 61 ticks identified from chickens 38(62.2%) were of *Argas persicus*, 20 (32.7%) *A.walkerae* and 3 (4.9%) were Ornithodoros moubata. Out of the 28 ticks isolated from guinea fowls, 16(57.2%) were *A. persicus*, 06 (21.4%) *A.walkerae*, 04 (14.3%) were *O. moubata* and only 02(7.1%) were *O. savignyi*. The study on location of ticks isolation revealed that out of the 89 ticks identified, 31(34.8%) were isolated from under the wings, 30 (33.7%) were isolated around the cloacal (vent) region, 28 (31.4%) were isolated from the breast area and none from head or neck region. The study showed that Sokoto area is an endemic area as far as ticks ectoparasites are concerned, with chickens having higher prevalence and A .persicus more common than the other species. .

Key words: survey, ectoparasites, ticks, domestic birds, Sokoto.

Introduction

Poultry farming refers to keeping domestic birds for egg and meat production. Poultry farming embraces keeping all types of domestic birds including chickens, guinea fowls, turkeys, ducks, geese, pigeons, etc (Alyeghago, 1983). Poultry has been interpreted to mean all birds reared or hunted for the purpose of eggs, meat fertilizer production (Oluyemi and Roberts, 2002).Local chickens, guinea fowls, geese and turkey have been used in small scale indigenous poultry production because of divergent roles it plays. Sale of eggs and live birds of urban and rural market is perhaps the only source of cash earnings available to rural families (Nwangu, 2002).

Poultry provides humans with companionship, food and fbre in the form of eggs, meat and feathers. Many people love to raise and show chicken and other poultry species at fairs and other poultry shows. Others just love to raise them as backyard pets and for fresh eggs everyday (Nwangu, 2002). Poultry litter plays a vital role as a fertilizer and soil amendment. Poultry litter, if properly handled, is a variable organic source of essential plant nutrients and soil amendment to improve soil quality. Applying poultry litter to agricultural lands is a proven, environmentally sound method for recycling essential nutrients. Litter can also have impact on soil pH and liming due to varying amounts of calcium carbonate in poultry feeds (Nwangu, 2002).

Poultry population in Nigeria has been estimated at 133-165m (FLDPS/RIM, 1991). However, there is a consensus that about 90% of this figure derived from indigenous chickens, ducks, turkeys and others served as a source of animal protein in Nigeria accounted to almost 25% of local meat production (Nwangu, 2002).

With all the importance of poultry farming, it has not been without the interference of microbial, viral and parasitic diseases. Ectoparasites hamper poultry production as they affect the health, growth and productivity through their feeding habits; by sucking their blood, tissue fluid and transmitting deadly pathogens. Some of the most common parasitic arthropods of poultry include lice, ticks mites, flies, etc. The feeding nymphs and adults of these ectoparasites cause irritation, restlessness and debility. In heavy infestations fatal anaemia may result. Ticks particularly, Argas species cause tick worry of birds and paralysis of poultry and transmit microbial and viral diseases such as. , Ornithodoros savignyi not only infest birds but also other animals like camels (Medical Dictionary, 2007; Remi *et al.*, 2007).

The importance of poultry farming and the effects of the presence of ectoparasites that affect production in terms of loss of animals, low productivity in meat, eggs and other products are some of the major reasons for embarking on this research. Other reasons are to investigate the occurrence of ticks and their prevalence, the different species involved, the disparity in prevalence on different poultry species and to identify the parts most commonly infested by the ectoparasites.

Materials and Methods

Method of Examination

A Survey was carried out to determine the occurrence and prevalence of ectoparasitic ticks on domestic birds sold at Sokoto Central Market between August and November, 2007. The domestic birds selected for the study were chickens, guinea fowls and pigeons. Sokoto market was visited five times at regular intervals for the examination. On each trip 30 birds each of the three species were examined for the presence of ectoparasitic ticks, making a total of 450 birds; 150 chickens, 150 guinea fowls and 150 pigeons. The birds were caught from each cage with the consent of their owners who assisted in restraining the birds prior to clinical examination.

b) Isolation of Ectoparasites

The parts of the bodies examined, as recommended by Nwangu (2002), were the head and neck region; under the wings; around the thighs and breast; and around the vent (cloaca).

Each bird was carefully examined by feather separation with fingers and pair of forceps to expose the skin of the birds for presence of the ticks. On clinical examination, birds were marked positive or negative to infestation appropriately. On positive examination some samples of the parasites were isolated using a pair of forceps and collected into specimen bottles for each species containing 10% formalin for fixation of the parasites for on ward identification of the samples at the Entomology Laboratory.

Identification of the Ectoparasites

Samples were viewed under stereo microscope, using x10 magnification power. This was done by placing each specimen on to a clean greese free slide with the aid of a pair of forceps. The samples were then identified by means of their taxonomic structures using the key to identification of ectoparasites by Walker *et al.* (2003).

All the samples were treated in this manner, taking note of the location of the host's body they were isolated from. The record of birds infected and ectoparasite species involved were determined.

Results

Out of the 450 birds examined, a total of 135(30%) were infected with ticks. Out of the 150 chickens examined 90(60%) were screened positive to infection, 45 (30%) guinea fowls and none of the pigeons were infected (Fig. 1). In all 89 ticks were isolated 61 (68.5%) were from the chickens and 28(33.3%) from guinea fowls. Out of the 61

ticks isolated from the chickens 38(62.2%) were *Argas persicus*, 20(32.7%) were A. walkerae and 3(4.9%) were Ornithodoros moubata (Fig. 2).

Similarly, out of the 28(33.3%) isolated from guinea fowls 16(57.2%) were *A. persicus*, 06(21.4%) were A. walkerae, 04(14.3%) were *O. moubata* and 02(7.1%) were *O. savignyi* (Fig.3).

Study on the location of tick isolation from the hosts' body showed that out of the 89 ticks identified 31(34.8%) were found from under the wings , 30 (33.7%) found around the vent, 28 (31.4%) were isolated from the breast area and non was from the head/neck region (Fig. 4)

The results showed evidence of tick infestation on domestic birds sold at Sokoto Market with higher prevalence in chickens than in pigeons. It also showed Argas and Ornithodoros as the only species involved. There is therefore the need for taking proper measures for control of the parasites and the need for more elaborate research on the ectoparasites of birds in the study area.

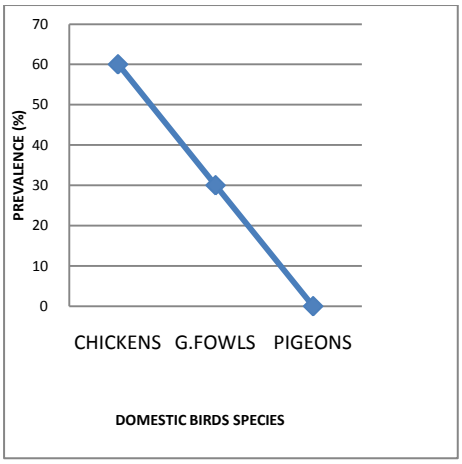

Figure 1: Prevalence of ticks on domestic bird species sold at Sokoto central market, Sokoto state, Nigeria

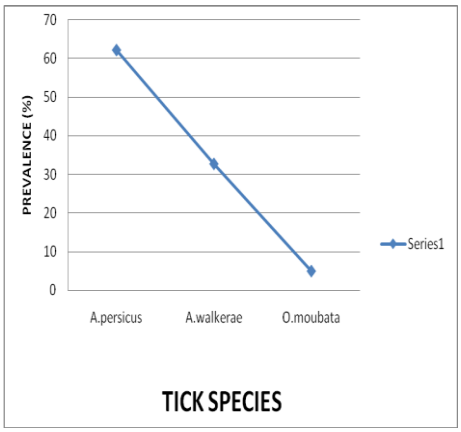

Figure 2: Prevalence of different tick species found on chickens sold at Sokoto central market, Sokoto state, Nigeria

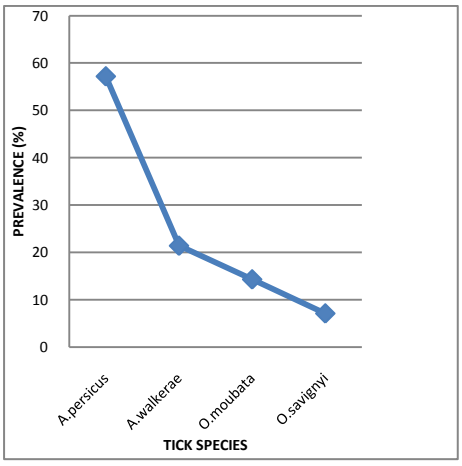

Figure 3: Prevalence of tick species on guinea fowls sold at Sokoto central market, Sokoto state, Nigeria

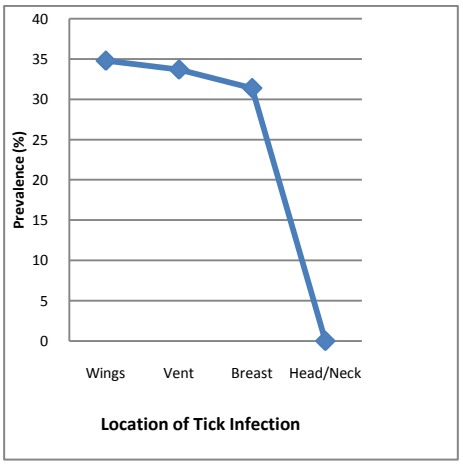

Figure 4: Locations of tick infestation on the domestic birds sold at Sokoto central market, Sokoto state, Nigeria

Discussion

Higher infestation of ticks on chickens may be attributed to their non predatory attitudes towards the parasites as they were known to feed mostly on seeds and even though they feed on insects they do not feed on ticks. Another hypothetical explanation may be due to their indiscriminate roaming about for food the ticks could have easy access to them. This finding tends to agree with previous findings from Oluyemi and Roberts (2002) and Biu *et al.* (2007).

Lower infestation of ticks on guinea fowls could be related to their predatory behaviour against the ticks. Guinea fowls were observed to be constantly picking their feathers, thereby depopulating the ectoparasites present on their bodies. This fact agreed with the report by NYTS (1999). Also, lower infestation of guinea fowls by the ticks may be as a result of their habitation. Guinea fowls have been known for their preference to climbing trees on which they sleep rather than in their cages or rooms. This tends to reduce their contact with the ectoparasites.

Absence of ectoparasites on pigeons may be related to their breeding habit; they are not usually mix-bred with either chickens or guinea fowls, hence, little chance of cross infestation of ticks.

The study revealed higher prevalence of *Argas persicus* than the other species. This is in line with report by Biu *et al.*(2007), that they they are some of the most important ectoparasites of poultry in semi-arid and arid regions, in which Sokoto is located. However, difference in prevalence between *Argas persicus* and other species may

either be coincidental or as a result of adaptability to the semi-arid conditions.

According to the results, body parts of the hosts most commonly affected were wings, vent and breast regions. This may be due to low distribution of feathers, thus easily invaded by the ectoparasites. This also agreed with the findings of Biu *et al.* (2007). On the other hand, the absence of ticks on neck/head region may be tied to the presence of high feathers cover on the neck and that the areas are not soft and fleshy like the other parts, thus, tissue fluid and blood may not be as available as in the three parts affected.

In conclusion, the result of the study has revealed that Sokoto market poultry section is endemic in terms of ectoparasites infestation, chickens have been found as the most affected and that *Argas persicus* was the most prevalent species. There is therefore the need for control of the ectoparasites.

From the foregoing, the followings are hereby recommended;

1) There is the need for improved management and sanitation of the poultry farms

2) There is the need for frequent use of both chemical and phytotherapeutic (Achariciдal) insecticides as suggested by Shah *et al.* (2006).

3) There is the need for further and more elaborate research in the area to find more about the ectoparasites.

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