Detection of Ova Of Ascaris lumbricoides in Some Selected Vegetables Sold In Bauchi Metropolis, Nigeria.

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ABSTRACT

The study was carried out in the Biological Science laboratory of Abubakar Tafawa Balewa University, Bauchi between October and November to detect the ova of *Ascaris lumbricoides* sold in Bauchi metropolis. Twenty-five samples of each different vegetable types, cabbage (*Brassica deracea*), lettuce (*Lactus sativa*), carrot (*Daucus carota*), cucumber and spinach (*Spinacia oleracea*) were bought randomly from the different market and examine for *Ascaris lumbricoids* in the laboratory using sedimentation and sucrose – NaCl flotation. Result shows that 22(22%) out of the 100 samples examined have *Ascaris lumbricoids.* The prevalence of *Ascaris lumbricoides* was found to be 35% in cabbage, 15% in lettuce, 30% in carrot, 25% in cucumber and 5% in spinach. This study shows a high prevalence of *Ascaris lumbricoides* on vegetables in Bauchi markets. The need for public enlightenment campaign on the danger of consuming inadequately washed and raw vegetables should be carried out.

INTRODUCTION

1.1 Background of the Study

A vegetable can be referred to as any kind of plant life. It is also commonly referred to as the fresh edible portion of an herbaceous plant roots, stem, leaves or fruit. Vegetable is an extra ordinary source of nutrient, micronutrient and fiber for human consumption and are thus vital for health and well-being. Well balanced diet rich in fruit and vegetables are especially valuable for their ability to prevent vitamin A and vitamin C deficiencies and are reported to reduce risk of disease (Kalia and Gupt, 2006). These plants are either eaten fresh or prepared in a number of ways (Kalia and Gupt, 2006).

It is a known fact that the use of faecally polluted irrigation water is a health risk to both farmers and consumers of crops produced. Raw waste water frequently contains high numbers of eggs of human intestinal nematodes (Ochei and Kolhatkar., 2000). Vegetables are widely exposed to microbial and parasitic contamination through contact with soil, dust, water and handling at harvest and post-harvest processing. The practice of using untreated waste water is gaining prominence in developing countries as a result of the growing cost of mineral fertilizers and because of the increasing demand for basic food supplies. Indirect water which contains a substantial percentage of municipal waste and sewage is also going on in many developing countries.

Epidemiological sturdy have indicated that in areas of the world where helminthic diseases are endemic in the population and where raw untreated waste water is used to irrigate vegetables generally eaten uncooked, the consumption of such waste irrigated vegetables may lead to parasitic infections (WHO, 1989). In many areas of developing like Nigeria, untreated waste water flows into rivers where subsistence farmers divert it for irrigation of crop vegetables such as carrot

(*Brassica carrota*), lettuce *(Lactuca sativa*), Tomatoes (*Lycopercium esculentum*), pepper (*Capsicum annum*), Spinach (*Amaratus* spp.) and others which are consumed raw or barely cooked are cultivated mostly through the use of untreated water supplies container sewage. The public health risks of using such contaminated water of irrigation are obvious.

Salad refers to a wide variety of dishes including green salad, vegetable salad and fruit salad. Green salad with leafy vegetables such as lettuce and generally served with a dressing as well as various toppings such as nuts, carrot and sometimes with addition of paste, fish or eggs.. Consumption of vegetables either raw or uncooked in addition to its usage as a great source of vitamins and mineral is a normal practice in Nigeria, but unfortunately some people do not know how to wash them properly (WHO,1989).

Ascariasis is one of the most common parasitic infection. Developing and matured *Ascaris* in the intestine frequently cause pain, nausea, diarrhea and vomiting. In recent years, there has been an increase in the number of report cases of food borne diseases linked to consumption of fresh vegetables (Al-magrin, 2010)

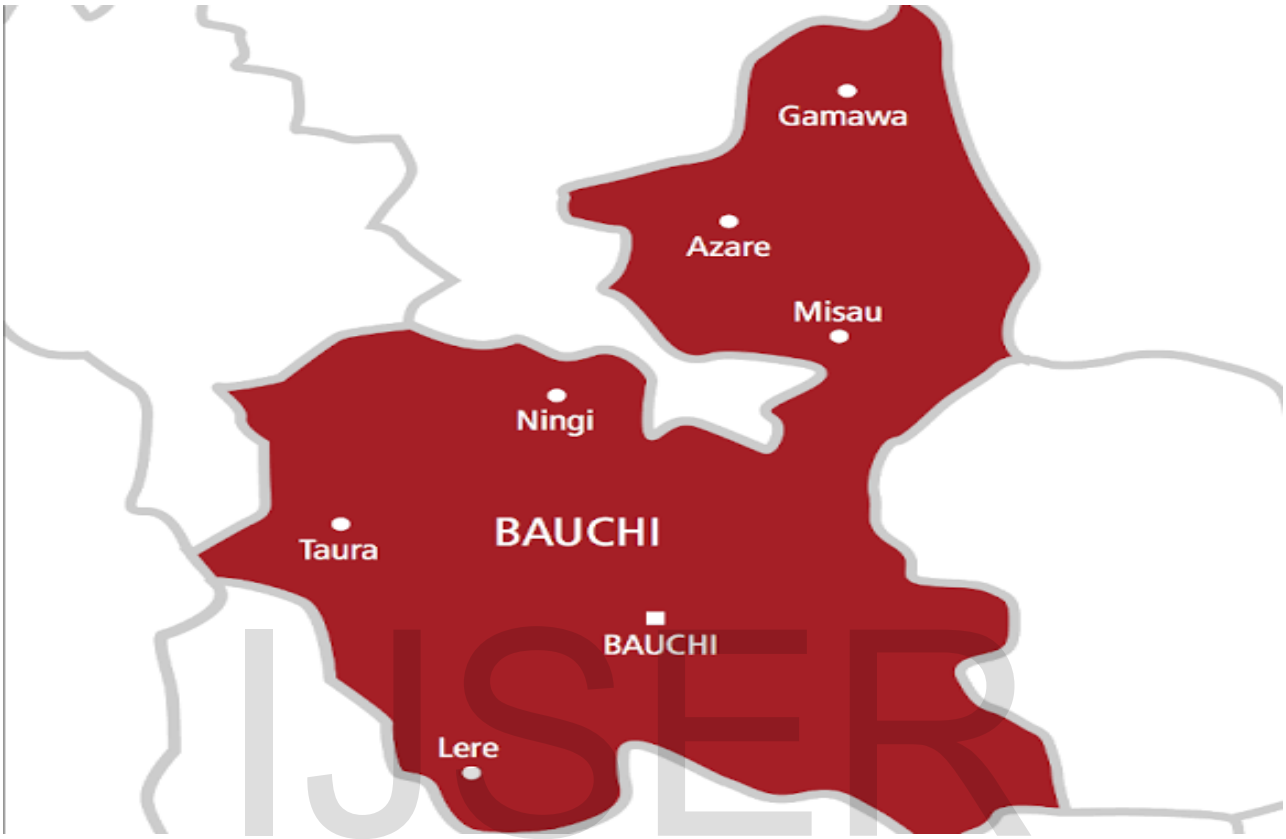
The prevalence and intensity of Ascaris infections are of utmost importance not only in the surveillance of public health, but providing base line data to plan and access the effectiveness of chemotherapeutic and educational interventions (Brooker *et al*., 2002). The findings of this study will provide useful information that will aid in control.

MATERIALS AND METHODS

3.1 Study Area

The study was carried out at Abubakar Tafawa Balewa University, Bauchi State. Bauchi Metropolis was located at northeast of Nigeria with a latitude and longitude of $10^0$18’57”N

$09^{0}50$”39”E/10.31583^{0}N 9.84417^{0}E, Elevation 2,021ft (616m), with a population of 693.700 as of (2006) census.



Sample Collection

Samples of each of the selected vegetables cabbage,(*Brassica deracea*), Lettuce (*Lactus Sativa*), Carrot (*Daucus carota*), Cucumber and Spinach (*Spinacia Oleracea*) were bought randomly from three selected markets (Mudan Lawan, Yelwan Tudu, and Central Market), all within Bauchi Metropolis. These markets serve as the central areas for receiving products from others states before their final distribution into others markets within the cities.

Transportation of Sample

All the samples were collected in a sterile polythene bags and then transported to Biological Science Laboratory ATBU, Bauchi, for further analysis.

Parasitological Examination

Two techniques were employed which include:

- Sedimentation method
- Concentration Method (Sucrose-NaCl floatation techniques).

1 Sedimentation method

200 gram weight of each vegetable sample was placed separately in a plastic container and washed with 10 ml physiological saline solution (0.95% NaCl) for the removal of parasitic ova, cysts or larva. The water used to wash the vegetable was left for 5 hours for sedimentation to take place and then the top layer was discarded and the remaining was transferred into a 10 ml test tube and centrifuged at 2000 rpm for 20 minutes (Al-Megrin, 2010). After centrifugation the supernatant was discarded into the disinfectant jar and the sediment was resuspended. A drop of the suspension was applied to the center of a clean glass slide and a drop of Lugols iodine was applied. A clean cover slip was placed gently on slide to avoid air bubbles. The preparation was examined under the microscope using X10 and X40 objectives.

2 Sucrose-Nacl floatation method

The method used in the sedimentation technique to obtain sediments from vegetables, washings was applied in this technique.

The floatation medium was prepared using 400g of NaCl that was weighed into a beaker with 150g of sucrose .A liter of boiled water was added to the beaker constaining the solute with few drops of thymol to prevent fungal growth, when cooled, it was transferred into a stoppered bottle for

preservation and further use. The media was introduced into test-tubes containing the sediments using a Pasteur pipette. (The test tubes was kept in vertical positions)

The Pasteur pipette was used to fill the tubes to the brim until a convex curve was observed, a clean grease-free cover slide was placed gently on the brim of the tubes. It was allowed to stand for 10-15 minutes.

The cover slip was removed carefully and placed on a grease-free glass slide and observed under x10 and x40 microcopy respectively.

CHAPTER FOUR

4.0 RESULTS

Out of the 100 samples of the five types of vegetables examined, 22 samples were positive for *Ascaris lumbricoides* with a percentage of 22%.

Table 1, Shows the prevalence of *ascaris lumbricoides* of the vegetables in different market , the highest prevalence of 8 (32%) positive cases occurred in Muda Lawal market 6 (24%) and central market 5 (20%) while the lowest contamination 3 (12%) was obtained in winti market.

Table 2, shows the contamination rate of vegetable samples by *Ascaris lumbricoides* from all market surveyed. Cabbage shows the highest contamination rate of 35% followed by carrot 30%, cucumber 25%, lettuce 15%, and spinach is the least contaminated vegetable with percentage of 5%.

In addition, the percentage rate for negative samples shows that spinach has the highest rate of 95% followed by lettuce 85%, cucumber 75%, and carrot 70% while cabbage has the least with the percentage of 65%.

Table 1.Shows the prevalence of contamination of vegetables in different Market.

Markets	**No. of Vegs. Type screened**	**No. of Vegs. Contaminated**	**Percentage Contaminated**
Muda Lawal	25	8	32%
Yelwan Tudu	25	6	24%
Wunti Market	25	3	12%
Central Market	25	5	20%
Total	**100**	**22**	**22%**

Table 2. Contamination rate of vegetables Samples from all markets surveyed.

Types of vegs	**No. of Samples Examine**	**No. of Samples +ve for *ascaris lumbricoides***	**Percentage (%) Rate for +ve**	**No. of Samples -ve for *ascaris lumbricoides***	**Percentage (%) Rate for -ve**
Cabbage	20	7	35%	13	65
Lettuce	20	3	15%	17	85
Carrot	20	6	30%	14	70
Cucumber	20	5	25%	15	75
Spinach	20	1	5%	19	95
Total	**100**	**22**	**110**	**78**	**390**

DISCUSSION

Food borne parasitic infections have received little attention in developing country. As a rule still on the field and are usually transmitted by contaminated water and spread by ineffective hygienic practice (Silvia *et al*, 2007). The findings from this study have shown that the eggs and larvae of *Asccaris lumbricoides* can be found at harvest of vegetables. Of the 100 sample of vegetables that were collected, processed and examined 22.0% of them were contaminated with the ova of *Ascaris lumbricoides*. This result is similar to the study carried by (Al-binali *et als*,2006). In saudi Arabia which reported the detection of *Ascaris lumbricoides* in 61% of leafy vegetables examined and Idahosa (2010) recorded 28% *A*scaris ova prevalence. Result from this study shows that cabbage had the highest contamination 35% and spinach is the least contaminated vegetable with percentage of 5%. Muda lawal market recorded the highest prevalence 8(32.0%) of infected samples followed by Yelwan Tudu market 6(24.0%), followed by central market 5(20.0%) and then Wunti market 3(12.0%). The highest prevalence of contamination with *Ascaris lumbricoides o*n vegetables might be due to the fact that these open markets are characterized by the presence of refuse dump sites and poor drainage, improper disposal of faeces of traders and poor hygienic practices. This is an addition to preceding contamination of vegetables arriving from rural areas around and outsides the market faecal contamination of water source used in crop et als,2002irrigation is an important source of human infection and contamination of fresh vegetables are of greatest concern (Orlandi), Shuval *et, al* (1986)observed that there is evidence that people consuming vegetables irrigated with raw waste water are exposed to the risk of infection with *Ascaris lumbricoides* trichris amoeba and tape worm.

The consumption of raw vegetables plays an important role in the transmission of parasite infections (Anuar, 1997). Recovery of parasites from vegetables may be helpful in indicating the incidence of intestinal parasite in a community.

The higher level of vegetable contaminated with *Ascaris lumbricoides* in this study is significant hence control measures will therefore include treatment of irrigation water,mucipal waste before use, treatment of infected persons and mass education of populace on the inherent danger in eating adequately washed or raw vegetables. Provision of good sanitary system in the rural and urban areas to prevent contamination of soil and water with parasites from faecal matter should be adopted**.**

There is need for improved surveillances system on food-borne pathogens, on food products through adequate vegetable farming procedures, improved transportation and storage facilities and various market destination.

CONCLUSION

Result from this study clearly show that raw vegetables consumed by people are quite often contaminated with *Ascaris lumbroides* these types of vegetable should be consider as a potential source of parasitic contamination in bauchi metropolis. These study detection of ova of *Ascaris lumbroides* in selected vegetables underscore the public health implication of consumers these vegetable being at high risk of infection with *Ascariasis* and others instestinal parasite. These parasite may be acquired through consumption of these vegetables especially when not SSShygienically grown and adequately prepared before consumption. Inhabitant of this region should be informed how properly how to disinfect these vegetables before consuming them raw.

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