

Parasitological Contamination of Some Common Consumable Farm Produce in Dekina Kogi State, Nigeria

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ABSTRACT

Fruits mostly rich in vitamins are an essential part of healthy diet. Most fruits aids in digestion processes and help in maintaining diet. Raw fruits are usually prone to parasitic infection and can act as fomite and agent of transmission of parasitic diseases. The aim of this study was to determine the parasitological contamination of some common selected fresh fruits sold by different seller in Dekina markets.

A total of 574 samples of fresh fruits sold at wholesale and retail markets were examined for helminth and protozoan eggs and cysts using standard methods.

Results: Of the 21 Orange, 120 Egg, Plant, 51 Banana, 120 Okro, 101 Tomatoes, and 161 Peper examined, larvae of *Stongiloides stercoralis* were detected in 5 (4.2%) of Egg plant, 6 (5.9%) of tomatoes and 40 (250%) of peper. Eggs of *Enterobium vermicularis* were detected in 1 (0.8%) of Egg plant and 1 (0.62%) of peper. 1 (4.76%) eggs of opisthorchis was found in orange and 1 (0.62%) cysts of *Entamoeba histolytica* was found in peper.

Parasitological contamination of raw fresh fruit sold in wholesale and retail market in Dekina may pose public health risk to consumers of such products.

Keywords: Contamination, Helminth, Protozoan, Fruits

Table 1: Samples of fresh fruits sold at wholesale and retail markets for helminth and protozoan eggs Examination

1.0 INTRODUCTION

Advances in agronomic, processing, preservation, packaging, shipping, and marketing technologies on a global scale have enabled the fresh fruit and vegetable industry to supply consumers with a wide range of high-quality produce year round. Some of the same technologies and practices have also introduced an increased risk for human illness associated with parasites and pathogenic bacteria. Changing factors that contribute to the epidemiology of diseases that may be associated with fresh fruits and vegetables were discussed

.Increases in foodborne illness during the summer are not fully understood, although fresh produce is likely to play a role since it is consumed in higher quantities during the summer. The per capita consumption of fresh produce has increased in Nigeria in recent years not only in the summer but also in other seasons, partly because of increased importation. Knowledge of the presence and numbers of specific pathogens on produce imported to Nigeria from countries that may have lower

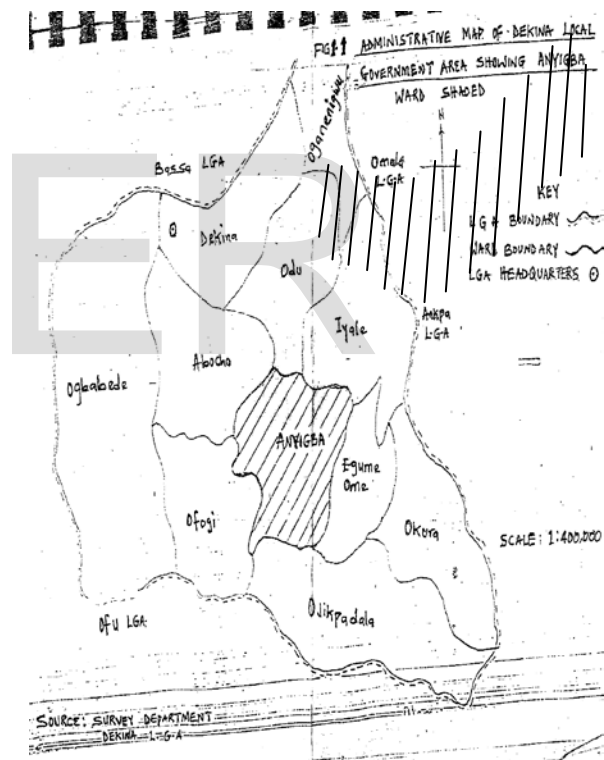
sanitation standards is minimal. However, produce from a single grower, packinghouse, or shipper, whether located outside or within Nigeria may be routinely distributed throughout the country, thus facilitating widespread dissemination of potential pathogens. The epidemiology of foodborne diseases is greatly influenced by these global changes. Control or elimination of pathogenic microorganisms from fresh fruits and vegetables can be achieved only by addressing the entire system, from the field, orchard, or vineyard to the point of consumption. The most important soil-transmitted helminthes include *Ascaris lumbricoides*, *Trichuris trichiura*, hookworm species, *Taenia spp.* *Toxocara canis* and *Toxocara cafis* of dogs and cats respectively. They require specific types of soil for development and physical conditions of soil adversely affect them. (James and Ogochukwu, 2006).The study revealed contamination by parasites cysts, oocysts, ova and possible measures to adopt in order to avoid such contamination.

2.0 Material and Method

2.1 Study areas

The study was conducted in Bassa and Dekina Local Government area the three major markets

and commercial township-of Kogi State middle belt Nigeria between April and August 2010. The following market were used for the study: Anyigba, Bassa and Dekina.. Anyigba is located very close to River Benue , Bassa is located close to Lokoja confluence township where River Niger and Benue meet. Dekina is daily market are located at the Northern part of Anyigba. Rural farmers usually bring the fruits and vegetables to the markets from nearby villagers and township.



SOURCE: SURVEY DEPARTMENT DEKINA

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Fig. 1: Administrative map of Dekina Local Government Area showing Anyigba and Dekina

2.2.1 Sample collection

The fruits and vegetable were bought from the traders in these markets in the morning.

Fruits include *Musa sapientum* (Banana), *Lycopersicon esculentum* (Tomato), *Citrus sinensis* (orange), *Piper nigrum* (pepper), and *Abelmoschus esculentus* (okra) the vegetables are *Amaranthus cruentus* (spinach) *Telferia occidentalis* (pumpkin leaf), *Talinum triangulare* (water leaf) and *Corchorus olitorus* (Jute leaf.)

2.2.2 Sample processing

100g of each type of fruits and vegetable were washed in 360ml of distilled water. Each suspension was strained through a piece of double layered sieve which filtered off coarse sandy particles but allowed the passage of helminth ova and larvae. The filtrate was centrifuge at 2500rpm for one minute. The supernatants were poured off from the different tube to each tube was checked for helminth ova and larvae by the concentration technique as described by Cheesbrough (1998) was used for the identification of the ova and larvae observed.

Chi-square test was used to determine whether any relationship exist between geohelminthic oval larvae and contamination of different fruits and vegetables, type of produce and location of markets.

2.2.3 Parasite Identification

The various samples on slides were mounted on the microscope. It was viewed using x10 objectives for focus and x40 for proper visibility and enumeration. Different stains were also added for identifying protozoan cysts and

oocysts. The diagnostic atlas, guides, charts, albums and Monica Cheesbrough part 1 (2008) were used.

3.0 RESULTS

Table Intestinal parasite on consumable farm produce in the study area.

Fruits	Quantities	Percentage infected	<i>Strongiloides stercoralis</i>	<i>Enterobium vermicularis</i>	<i>Opisthorchis</i>	<i>Entamoeba histolytica</i>
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Orange	21	.	.	.	1(4.76%)	.
Egg Plant	120	5(4.2%)	5(4.2%)	1(1.8%)	.	.
Banana	51
Okro	120
Tomatoes	101	6(5.9%)
Pepper	161	40(2.50%)	.	1(0.62%)	.	1(0.62%)
Total	574	51(12.60%)	5(4.2%)	2(2.42%)	1(4.76%)	1(0.62%)

Looking at fruit vegetables contamination in the studied areas, pepper had highest prevalence with 40 (2.50%). It was follow by tomatoes with 6 (5.9%) out of 574 fruits examined. Egg plant had least with 5(4.2%) while banana and okro fruits examined were not contaminated. Among parasite encountered, *Strongloides stercoralis* recorded the highest with 5 (4.2%) while *Opisthorchis species* and *Entamoeba histolytica* had the least with 1 (4.76%) and 1 (0.62%) Only orange fruit was contaminated with opisthorchis species. The study also showed that both egg plant and pepper was observed for multiple contaminated.(see the Table).

4.0 DISCUSSION AND CONCLUSION

Majority of the fruits examined were contaminated with geohelminth and instestinal parasites ,the contamination might be as a result of various factors ranging from cultivation practiced system, planting, harvesting and mode of carriage. Similar study Omowaye *et al*, (2013) also revealed the effect of planting system on market produces. Hence ,there should be precaution or embango on the used of organic manure for the planting and growing of fruit and vegetable. This will go a long way to reduce the rate of geohelminth contamination.

Recommendations

Since both fruits and vegetables were found to be contaminated, consumers are advised to wash them thoroughly before eating or using for food preparations.

The promotion of better environmental condition with emphasis on health education with regards to mode of transmission of the diseases, environmental sanitation and personal hygiene and eating habits will enhanced the prospect for the control of parasitic infections in Kogi State.

A well articulated health educational programmed with emphasis on personal and community responsibility in making the environment ecologically unconductive for the breeding and spread of the vectors of the parasites could form a subject of preaching in the church.

References

James,I.M. and Ogochukwu. O. (2006), Food-borne disease outbreaks *Journal of Environmental Health Vol.3, Pp 2-3*

Monica Cheesbrough (2008) Diseases. In:

District Laboratory Practice in Tropical

Countries Low Price Edition. Cheesbrough, M.

(Edition). Cambridge University Press, United

Kingdom.

Cheesbrough, M. (1998): Diseases. In: District
Laboratory Practice in
Tropical Countries Low Price
Edition. Cheesbrough, M.
(Edition). Cambridge
University Press, United
Kingdom. Pp 185-300

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