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Research Article

EXAMINATION OF FOOD-BORNE PARASITES IN NORTHERN-PART OF NIGERIA

***Omowaye O S and Odikamnoro O O**

Department of Biological Science, Kogi State University, Anyigba, P.M.B 1008, Anyigba, Nigeria.

*Corresponding Author Email: Jesuniyi4wealth@yahoo.com ,Tel: +2348037696091.

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Abstract

Examination of food-borne parasites in Northern-part of Nigeria was evaluated. Two thousand four hundred and twenty-six samples comprising Banana (333) Tomatoes (251) Orange (97) Egg plant (348) Okro (414), Pepper (312), Vegetables (*Amarathus cruentus*) (150) Pumpkin leaf (90), Water leaf (100) Bitter leaf (90) Onion (191) and Jute leaf (50) were tested by standard microbiological methods to determine parasite contamination. Out of these, a total of 368 samples were contaminated. Pepper recorded the highest mean abundance of 0.26, follow by Bitter leaf 0.16 no cases of contamination in Jute leaf in all the markets, parasites eggs of *Trichuris trichiura, Ascaris, Enterobium vermicularis* were highly detected in that order. These findings demonstrate that parasitological quality of fresh fruits and vegetables sampled; suggest that the risk of food borne diseases from raw fruits and vegetables was not so high. But there is still the need to enforce good hygiene practices to avoid contamination of fresh fruits and vegetables.

Key words: Fruits, vegetables, contamination, Kogi, Nigeria.

INTRODUCTION

Everyone knows that fruit and vegetables are important, as essential building blocks of any diet. Not only are they loaded with vitamins and minerals which are essential for healthy living, but they also help fill you up, as part of a balanced diet. By increasing your intake of fruit and vegetables, it will benefit your health, and will boost your immune system, as well as building resistance to common illnesses and infections. Furthermore, fruit and vegetables can leave you looking better and feeling great, as part of a healthy diet, which can be an all round improvement for your well-being. The increasing consumption of fresh fruits plants by many people in Kogi State, has urged the undertaking this study to investigate the parasites stages carried by these plants in Kogi Nigeria This study is therefore necessary to ascertain the prevalence and types of parasites found on vegetables and fruits in the study areas. And this will enable the proffering of solution to the consumers.

MATERIALS AND METHODS

Study areas

The study was conducted in Bassa and Dekina Local Government areas the three major markets and Commercial Township-of Kogi State middle belt Nigeria between April and October 2010. The following markets 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 market is traded daily is located at the Northern part of Anyigba. Rural farmers usually bring the fruits and vegetables to the markets from nearby villagers and township.

Sample collection

The fruits and vegetable were bought from the traders in these markets between the hours of 6.00am and 11.00am in the morning. Fruits include *Musa sapentum* (Banana), *Lycopersicum esculentum* (Tomato), *Citrus sinensis* (orange), *Piper nigrum* (pepper), and *Abelmoschus esculentus* (okro) the vegetables are *Amaranthus cruentus* (spinach) *Telferiria occidentalis* (pumpkin leave), *Talinum triangulare* (water leaf) and *Corchorus olitorus* (Jute leaf).

Sample processing

One humdred grams (100 g) of each type of fruits and vegetable were washed in 360 ml 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 2500 rpm for one minute. The supernatants were poured off from the different tube and each tube was checked for helminth ova and larvae by the concentration technique as described by cheesbrough (1998) and it 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.

RESULTS

The results show that 107 (4.41%) of the 2426 of fresh fruits and vegetables investigated were contaminated with potential parasites. Parasites eggs and cysts were found in all the fruits and vegetables examined with exception of Jute leaf. The general distribution of the parasites contamination on the various samples were *Trichuris trcahuira* 42 (1.72%) *Fasciola species* 15 (0.6%) *Ascaris lumbricoides* 19 (0.78) Hookworm 1 (0.04%) *Enterobium vermicularis* 11 (0.45%) *Taenia* species 1 (0.04%) and *Opisthorchill* 11 (0.45%) (Table1).

Table1. The general distribution of the parasites contamination on the various samples.

Total No Examined	Trichuris trichiura		Ascaris		Hookworm		Faciola sp		Enterobium Vermicularis		Opistochilio		S. Intercalatuim		Taenia species		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
761	10	(1.31)	3	(0.13)	1	(0.13)	0	(0.0)	3	(0.39)	0	(0.0)	2	(0.26)	0	(0.0)	1
854	22	(2.71)	16	(1.97)	0	(0.0)	0	(0.0)	1	(0.12)	0	(0.0)	0	(0.0)	0	(0.0)	3
811	10	(1.17)	0	(0.0)	0	(0.0)	15	(1.76)	7	(0.8)	11	(1.29)	5	(0.59)	1	(0.12)	3
2426	42	(1.73)	19	(0.78)	1	(0.04)	15	(0.6)	11	(0.45)	11	(0.45)	7	(0.29)	1	(0.04)	1

DISCUSSION

The results obtained from this study show that the samples were not save for hygiene despite the fact that pre-washing was done by the seller before marketing. This contamination may have been introduced at the point of processing, carriage and distribution. Fresh vegetables like Onion, tomatoes and fruits like garden egg and orange are important fruits for the traditional Kogi and Nigerian indigene. Most of these samples were eaten raw without been cooked. Inclusion of highly contaminated fresh fruit and vegetables in traditional and familiar foods certainly will expose consumers of such foods to the risk of acquiring intestinal parasites.

Eggs of *Trachuris trichiura* and *Ascaris* were defected in 42 (1.73%) and 19 (0.78%) of samples examined being the predominant intestinal parasites in the present work. A study from Saudi Arabia reported the detection of *Ascaris lumbricoides* in 16% of leafy vegetables examined (Al-Binali et al., 2006). Another study from Iran, reported a prevalence of 25 and 29% from pathogenic parasites in vegetables of markets and gardens, respectively with *Ascaris lumbricoids* egg being detected in 2% of samples examined (Daryani et al., 2008). In some previous studies in the country, *Ascaris* encompasses the highest rate in this regards (Hamzavi, 1997; Seyed et al., 1997), it could be understood that parasitic contamination from fruits and vegetables in the studied markets was relatively low compare with the large

number of samples (2426) examined. The reasons for this may be because of the contaminated ways of transportation and warehousing that are given adequate attention.

In conclusion, one can deduced that once adequate care, personal hygiene, monitoring the means of transportation is considered, parasites contamination will be reduced.

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