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Parasitic Contamination of Fresh Vegetables Sold in Jos Markets

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Abstract

Common vegetables brought for sale in market within Jos South Local Government Area of Plateau State were screened for human parasites in Federal College of Veterinary and Medical Laboratory Technology (FCVMLT), Vom, Plateau State. Four hundred (400) samples of eight different vegetable types such as cabbage, lettuce, carrot, spinach, pumpkin, garden egg, tomatoes, and waterleaf were obtained in five different markets of the Local Government Area and screened using centrifugation method. Cysts, ova and larvae of intestinal protozoa, cestodes and nematodes were recovered. 225 (56.25

Index terms— Vegetables, Markets, Parasites, Infection, centrifugation.

1 INTRODUCTION

The cultivation of vegetables for commercial and domestic purposes in Nigeria is mostly carried out by peasant farmers depend on irrigation or natural rainfall (Luca, et al 2000). These vegetables though seasonal, are cultivated in the same piece of land every year. As a result of this continuous land usage there is depletion of nutrient hence the need for fertilizer or manure. Most farmers use untreated animals and human faeses as manure, which are known to contain various species of parasites that are of medical and veterinary importance. **??**Okoronkwo,1998). Indiscriminate faecal disposition in bushes, farm lands and even in present farms with a belief of enriching the lands is also a common practice by farmers and unlearned citizens. Some of the water bodies used for irrigation are also polluted with parasites infected excreta, that could lead to recycling of infection **??**Ayer, et al;1992).

Altekruse, **??**1997), reported that the potential risks factors for human intestinal parasitic infection, viz; Ascaris lumbericoides, Trichuris trichuria, Ancylostoma duodenale, Necator americanus, Balantidium coli, Giardia intestinalis, Blastocystic hominis involve unhygienic associations with unhygienic environment. The study was conducted in Jos South Local Government Area of Plateau State during dry season; between February and April. Vegetable samples were collected from markets in the Local Government Area. Majority of the inhabitants of the area are peasant farmers and petty traders of low economic status. The watering of vegetable at this period is through irrigation. It is a common practice that majority of the farmers use human and animal manures to augment the egetables are essential for good hearth, and they form a major component of human diet in every family. They are vital energy contributors that are depended upon by all levels of human as food supplement or nutrient (Duckworth et al, 1996). They substantially improve food quality and have high water content as seen in lettuce and cabbage. Many vegetables are good sources of vitamin C, carotene and mineral elements such as iron, and vitamins including thiamine (Vitamin B12), Niacin and Riboflavin. **??**Frazier and West hoff, 1998).

2 II.

3 MATERIAL AND METHODS

4 V

The cultivation of vegetables in many parts of the word has been amplified with the application of fertilizer and or manure. In Africa, the transmission of intestinal parasitic infection has been considered to increase successfully

due to the frequent use of untreated human or animal dung as manure in cultivation by the local farmers, which serves as a source of enhancement of zoonotic parasitic infection. **??**Luka et al.,2000). Consumption of raw or unhygienically prepared vegetables such as cabbage (Brassica deracea), lettuce, okra, garden egg (Sdanum macropium), cucumber, carrot (Daurus carota), water leaf (Talinum trangulare), pumpkin (Telfairia), spinach, tomatoes (Lycoperisicon esculentum), etc, is considered to be a risk factor for human parasitic infections (Chessbrough, 1991).

commercially processed fertilizer to limit their cost of farming.

5 b) Sample collection

The vegetables screened were cabbage (Brassica oleracea), lettuce (Lactuva sativa), carrot (Daurus carota), Garden egg (Solanum macropium), Tomatoes (Lycoperisicon esculentum), Pumpkin (Telfairia), water -leaf (Talinum trangulare) and spinach **??**Ayer, et al;1992).

c) Screening procedure:

The samples were washed with formol saline according to their batches in 100 ml round bottom clean plastic container. These were allowed to stand on the bench for one hour to allow time for proper sedimentation. The supernatant was discarded with a Pasteur pipette leaving about 15ml at the bottom. 10ml of the deposit mixture was transferred into a centrifuge tube and spun for five minutes at 3,000 rpm. The supernatant was decanted while the deposit was resuspended with 10% formal saline. This was centrifuged, the supernatant was decanted and the deposit was then transferred to a clean glass slide. A drop of iodine was added to stain the cysts, it was then covered with a cover slip avoiding air bubbles and over floating. 10* and 40* objectives were used for examination.

6 III.

7 RESULTS

Out of the 400 samples of the eight types of vegetables, 213 were positive for intestinal parasite with a percentage of 56.25. The parasites encountered include some species of protozoa, cestode and nematodes. The protozoa parasites are Entamoeber histolytica and Entamoeber coli, the cestode is Hymenolepis nana, and the nematodes are Ascaris lumbricoides, Trichuris trichiura, Hookworm and Strongyloides stercoralis. 11, shows the parasitic contamination of different vegetable; where Lettuce was found to have the highest poly-parasitic contamination of five species of parasites, whereas Garden egg and Carrot showed the least poly-parasitic contamination of two parasites. Table 111, shows the rate of infection of each vegetable sample. Water leaf shows the highest contamination rate of 90%, while garden egg is the least contaminated vegetable with a percentage of 30%. Figure 1: represent the frequency of occurrence of parasites; Strongyloides stercoralis has the highest occurrence while Hymenolepis nana shows the least occurrence on various vegetable types.

Out of 248 parasitic occurrences, 15 were protozoa, 233 were nematodes, while 1 was cestode. This work also revealed poly-parasitic contamination of some of the samples which makes them vehicles for multiple parasitic infections. Hygienic status of the consumers and producers, vegetables being adequately harboring the infective forms of the parasites, the behavioral attitude of producers in application of untreated human and animal dung as manure leading to the transmition of zoonotic infection, the use of irrigation source which receives raw affluent from human or animal wastes.

The consumption of vegetables raw or undercooked is a way by which the transmition of these parasites is encouraged. This is true with the believe that the consumption of raw or undercooked vegetables give more nutrient. Hedberg C. W. (1994). In agreement to Chiodini P.L. (2001); Isolation of more than one parasite per sample in this work reflects the possibility of a poly feacal contamination of vegetables which most probably result to poly parasitic infection in man. The high occurrence of these parasites reflects a high level contamination and persistence of human infection. This is in agreement with the study of Gibson D. I. **??**1994), that the prevalence of intestinal parasites among a particular people is an attribute of environmental pollution by human feces. The life cycle of the parasites particularly the Strongyloides stercoealis which has both parasitic and free living state enhances the proliferation of larvae without the host (Feachem et al, 1983). The consumption of water-leaf with 90% occurrence is a risk factor as it is a common vehicle for transmision, particularly when the hygienic condition of the consumers is poor, **??**HO (1999). In contrast to Soni G. R and Nama H. S (1992) study, who reported that Hookworm (64.4%) and T. trichiura (23.36%) were the highest contaminating parasites in their area of study, this study reveals Strongyloides stercoralis (60.1%) and Hookworm (28.6%) as being the highest occurring parasites in this study area. However, the overall result is not an exact representation of the findings of previous researchers because the areas of study differ both in geographical location, climatic, environmental conditions, the general behavioral attitude to hygiene and the socio-economic activities of producers, sellers and consumers. The number of samples collected differs also, and consequently, the results differ variously.

V.

8 RECOMMENDATION

Vegetable cannot be removed from human diet, but can be excluded from the cycle of transmission and dispersion of parasites. This can be achieved by mentainance of simple personal and environmental hygiene by sellers and consumers, avoid using untreated human and animal wastes as manure, soaking of vegetable for 10 minutes in vinegar or saturated salt solution which will plasmolize the parasites if present, cooking of vegetables adequately before serving them as meal, avoidance of indiscriminate defecation.

9 VI.

10 CONCLUSION

It is obvious that vegetables consumed by people are quite often contaminated with parasites, more especially by intestinal parasites. This is an indication that humans are always at risk of infection especially as vegetables is naturally popular in the diet of people of all classes, Bean NH, (1990). These findings underscore the public health implication of vegetable farmers, sellers and consumers, being at high risk of infection with Strongyloidiasis, Ascariasis, Amoebiasis and a host of others. The high prevalence of parasitic infection among the public has led to increased funding for epidemiological surveillance, unwarranted financial stress on patients, incidence of hospital admission, increase in the demand of antihelminthic drugs, pressure on pharmaceutical industry to discover and develop a more potent antihelminthic drugs to curtail increase spreading of parasites, the risks of death and finally food insecurity in West Africa.

The campaign to eradicate parasitic infection must be intensified; this is the more reason world health organization has continued to call for global strategy in putting this menace under check (WHO, 1999).

11 REFERENCE Références Referencias

12 DISCUSSIONL

The presence of intestinal parasites in vegetable samples is suggestive of faecal [1] [2] [3]

Figure 1:

Figure 2:

1

Figure 3: Fig: 1 :

[1] © 2011 Global Journals Inc. (US)

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Figure 4: 1

1

Figure 5: Table 1 ,

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		Parasitic Contamination of Fresh Vegetab
2011 May 22 Volume XI Issue I Version I Medical Research Global Journal of	They were randomly collected in batches of 50 per markets in the L.G.A, and wrapped in clean polythene bags and labeled. A total of 400 samples of vegetables of the eight different types were as include; Bukuru main market, Sabo-barki market, sukwa market, Vom market and Zawan market, all in Jos south LGA. The screening of vegetable samples was carried out in the Parasitology Laboratory of the Federal C	
M Markets Bukuru Sabobariki		Number of vegetable types screened 80 80
Vom		80
Zawan		80
Sukwa		80
Total		400

[Note: © 2011 Global Journals Inc. (US)]

Figure 6: Table 1 :

3

Types of vegetable
Cabbage
Lettuce

Figure 7: Table 3 :

2

Parasitic Contamination of Fresh Vegetables Sold oin Jos Markets

Parasites	C	L	C2	S	G egg	P	T	Wl
Entamoeba histolytica	+	+	-	-	+	-	+	-

Figure 8: Table 2 :

[Of The] , Digenea Of The . *Int. J. Parasitology* 24 p. .

[Frazier and Westhoff ()] , W Frazier , D Westhoff . 1998. p. .

[Hedberg et al. ()] 'Changing epidemiology of foodborne disease S, A minesota perspective'. C W Hedberg , K L Mcdonald , M T Osterhoim . *Cin, infect .disease* 1994. 18 p. .

[Pl ()] 'Chemotherapy for patients with multiple parasite infection'. Chiodini Pl . *parasitology* 2001. 2001. 22 p. .

[Duckworth ()] *Farming systems for the production of fruits and vegetables. Fruits and vegetables oxford*, R Duckworth . 1996. Pergama press. p. .

[Gibson and Bray ()] D I Gibson , R A Bray . *The Evolutionary Expansion and Host parasite*, 1994.

[Luca et al. ()] 'Helminthosis among primary school Children'. S A Luca , I Ajugi , J U Umuh . *Jn of Parasitology* 2000. 21 p. .

[Okoronkwo ()] *Intestinal parasites associated with human and animal waste stabilization*, M Okoronkwo . 1998. Nigeria. University of Jos (Ph.D Thesis)

[Cheesebrough ()] 'Medical parasitology'. Cheesebrough . *Medical lab manual for tropical countries* 1991. 1 p. .

[Donald ()] *Medical parasitology section, medical microbiology. Pg 315 -339. Applelon and lange publishers*, Hayneman Donald . 1995.

[Soni and Nama ()] G Soni , H Nama . *Viability of Geohelminth eggs on foodstuff comparative physiology and ecology*, 1992. 6 p. .

[Surface decontamination of fruits and vegetable eaten raw. Food safety programme document World Health Organization (1999)] 'Surface decontamination of fruits and vegetable eaten raw. Food safety programme document'. *World Health Organization* 1999. Nov.1999. p. .