Peer Reviewed, Open Access, Free
Published Quarterly
Mangalore, South India
ISSN 0972-5997
Volume 8, Issue 2; Apr-Jun 2009

Case Report

Food poisoning due to yam flour consumption in Kano (Northwest) Nigeria

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Citation
Adeleke SI. Food poisoning due to yam flour consumption in Kano (Northwest) Nigeria. *Online J Health Allied Scs.* 2009;8(2):10

URL
http://www.ojhas.org/issue30/2009-2-10.htm

Submitted: May 8, 2009; Accepted Jul 16, 2009 Published: Sep 8, 2009

Abstract:
Food poisoning is known to occur sporadically from time to time due to poor hygienic preparations. Its occurrence rarely assumes epidemic proportion. The objective was to report the occurrence of food poisoning due to yam flour among three families which occurred almost in quick succession between March and July 2007 among three families in Kano. They presented with diarrhea, vomiting, abdominal pain, convulsion and loss of consciousness. They all recovered within 48hours of admission. Investigations indicated that the use of certain lethal preservatives for the processing of the yam flour might be responsible. Poisoning from consumption of yam flour should be a differential diagnosis of acute seizure disorders or occurrence of vomiting, diarrhea and abdominal pain in the tropics. It is recommended that education on proper processing of all food products in view of the public health implication.
Key Words: Food poisoning, Yam flour, Kano

Introduction:

Food poisoning could be due to either biological or chemical causes. Food poisoning actually occurs sporadically. Its occurrence does not usually assume epidemic level. Yam flour remains a common staple food among the Yarubas in the north central and south western Nigeria. It is obtained from processing of yam which is the tubers of dioscorea ssp.[1] It consumed by people in west Africa.[1] Nigeria produces about 30million tones of yam making it the worlds largest producers[2] of yam. It contains mainly of carbohydrate with little amount of proteins, lipids and vitamis.[3] some of the harvested yam are processed in the south west into yam flour and transported[1] to other parts of Nigeria for family consumption. Most of the poisoning due to yam flour was reported from north central and south west Nigeria.[4]

This communication will report cases of food poisoning due to yam flour consumption in Kano, Northwest Nigeria, which occurred in quick successions between March and July 2007 among three families' members in Kano, (Northwest Nigeria). The families involved obtained the yam flour from the central market in Kano city.

Case Report:

Family 1:

Two siblings aged 5 and 8 years presented to the Emergency Paediatric Unit of Aminu Kano Teaching Hospital, Kano in March 2007 with history of diarrhea, two episodes of vomiting and abdominal pain. The symptoms started about 30minutes after consumption of a meal of yam flour and okro soup prepared by the mother. The eldest child aged 11years was not admitted but also had vomiting and abdominal pain. The two children were placed on intravenous fluids and were stabilized by next day; they were also placed on ORS. The symptoms resolved within 24hours. They all remained stable after at follow – up.

Family 2:

About three weeks after the first family that is in April, 2007 a 9 year old child presented with vomiting and three episodes of generalized tonic clonic convulsion of two hours duration following a meal of yam flour with melon sauce taken about three hours earlier prepared by the mother. He is not a known seizure disorder patient and there was no fever. One other sibling developed vomiting but no convulsion. On examination observed generalized tonic-clonic convulsion and altered state of consciousness (Glasgow coma score – 8). Paradehyde and phenorbarbitone were given to stop the convulsion and he was also given parenteral bolus of 50% dextrose. The cerebrospinal fluid microscopy, culture and sensitivity, protein and sugar were normal. The patient became fully conscious within 24hours. The other sibling with vomiting remained stable at 48hours. They all remained stable at follow-up.

Family 3:

Four children aged two, four, eight and ten years of the same parent developed generalized tonic clonic convulsion about three hours after a meal of yam flour with okoro sauce in July, 2007. There were all rushed to a private health facilities. There was no neck stiffness cerebrospinal fluid analysis were normal. Each of them had two to firm episodes of generalized seizures. There was no post-ictal loss of consciousness. The seizures abated with paraldehyde and phenobarbitone. They were all discharged after 24hours. They all remained stable at follow-up.

Discussion:

Yam flour is a stable food in most parts of Nigeria especially some parts of North central and South western Nigeria.[4] Yam storage before processing to yam flour is an elaborate process involving the yam chips been preserved with pesticides such as gammalin 20 and phosphile. Gammalin 20 is commonly used by farmers. These chemicals can be lethal, since it stays on the yam chips. It is also heat resistant and so it sticks to the yam for a long time despite boiling at very high temperature. Phosphile is also used; it releases phosphate gas to kill the pests. However, the yam flour made yam chips treated with phosphile should not be eaten for the next three months. This is actually to allow the phosphile gas to wear off. Due to the economic melt down, there was rush to sell this yam flour for money. Yam flour consumption was a common and consistent proceeding event in all the patient's highlighted in the case reports. The sauce with which the yam flour was served is unlikely to be the cause of food poisoning as the patients took varied sauces.

Stored yam chips generate osmotic pressure under the warm and humid tropical climate and it absorbs moisture from the surrounding.[5] Vasible moulds growth on yam chips are possible. Mycotoxin such as allatoxin are toxic metabolites produced by the fungi, they are associated with mouldy growth on agricultural products.[6] Aflatoxin beyond the tolerance level in food can produce effects such as vomiting, diarrhea and convulsion?

There was no toxicological assessment of the yam flour because non-availability of facilities for this procedure. The aldrin chemicals used for these agricultural products could have produced those symptoms in these children.[8] Investigations from the areas where the yam flour is produced, the preservative commonly used by farmers revealed that mixture with aldrin might have produced the toxic effects. The famers were also in hurry to sell or consume the products and in the process, went for what the farmers considered effective. The level of toxicity of aldrin depends on the serum level attained after consumption. Concentrations[9] of less than 20ug/L were usually associated with mild poisoning which involved symptoms such as nausea, vomiting and epigastric pain, while concentrations of 100-200ug/L were considered to represent

moderate intoxication and were associated with nausea, vomiting, epigastric pain, headache, dizziness and convultions.[9] Severe cases were associated with levels above 700ug/L.[9]

The cases reported occurred during the dry season when the store of food is depleted. Therefore, whatever was available were processed in a hurry without going through the due process.

Yam and yam chips are produced and marketed to the general populace mainly by farmers in rural areas. Their action is capable of affecting a large number of people. There should be proper preservation of yam flour by agricultural extension workers. At health facilities, there must be vigilance for cases of food poisoning especially during the dry season. There should also be urgent setting up of toxicological centres in the geo-political zones of the country.

References:

1. Watt AW. Yams: Dioscorea species. *Field crop* 2003;35:792–815.
2. Food and Agricultural organization. Annual production book. 2004;108–115.
3. Babalola M, Oyenuga VA. Value of yam Dioscorea speiceis. In Nigerian food and feeding stuffs. Ibadan, University Press, Ibadan, Nigeria 2001. P 110–114.
4. Adedoyin OT, Ojuawo A, Adesiyun OO, Mark F, Anigilaje EA. Poisoning due to yam flour consumption in five families in Ilorin, central Nigeria. *West Afr Med J* 2008;27(1):41–43.
5. Davey PM, Elcoate S, Moisture content, relative humidity equilbra of tropical stored products. *Int J Crop Prod* 1995;104:1108–1115.
6. Udoh JM, Cardwell JF, Ikotun T. storage structures and aflatoxin content of maize in five agro-ecological zones of Nigeria. *J stored Prod Res* 2000;36:187–201.
7. Adebayo LO, Idowu OO. Mycoflora and aflotoxin in a West Africa agro-products. *J stored Prod Res* 2005:41;4387–401.
8. Bara V, Laburnum M. In Paediatric toxicology Handbook for poisoning in children. In emergency Toxicology 2nd ed, Saunders, Philadephia, 1997. P 1067–1079.
9. Kumkel DB, Spoerke DG, Evaluating exposures to plants. *Emrg Med Clin North Am* 1984;2(1):133–144.