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Knowledge, Attitude and Practice of Sudanese Household toward Aflatoxin in Groundnuts Pasted

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Abstract: **Purpose:** ***Aflatoxin is toxin produce by mold that can damage the liver and may lead to liver cancer . A fungi that produce Aflatoxin grow on corns such as peanut and wheat corn, beans and rice. Afaloxin is a real problem in developing and under-developing country. Objective: The aim of these study to identify the knowledge, attitude and practice of Sudanese household Aflatoxin in Groundnuts Pasted at Khartoum State-Sudan-South Khartoum Locality-South AlRemala Block 2 -2016. Method and Material: - 135 household wives were interviewed. Questionnaire was used to collect the data. Results: (30.8%) Most of the housewives their education is secondary school level. 71.4% of the housewives are non-employee. 90.8% of the respondents were bought the groundnuts paste from the market. 57% of the household wives used groundnuts paste in salad (Tomato+ Cucumber + Onion). 76.6% of the household wives have no knowledge about aflatoxin. 7.3% of the respondents were not known the disease caused as result of contamination of groundnuts by aflatoxin. Conclusions: Knowledge, attitude and practice towards aflatoxin is very poor. Health education session should be conducted about how to select and to prepare the proper groundnut paste at home. Recommendations: increase the awareness of the housewives about the contamination caused by aflatoxin in the groundnuts paste. Household wives should prepared groundnuts paste at home to avoid aflatoxin and contamination to protect their family member health.***

Keywords: Aflatoxin, Groundnuts, Awareness, Health, Sudan

1. Introduction

Aflatoxin is a naturally occurring Mycotoxin produced by two types of mold: Aspergillus flavus and Asperglillus parasiticus. At least 13 different types of aflatoxin are produce in nature with Aflatoxin B1 considered as the most toxic. Aflatoxin B1 is produces by both Aspergillusflavus and Asprgillus parasiticus. Aflatoxin M1 is present in the feremintation borth of Aspergillusparastic. Aflatoxin M1& M2 produce when an infected liver metabolizes Aflatoxin B1& B2. (Machida, 2010). Aflatoxin M2, metabolite of Aflatoxin B2 in milk of cattle fed on contaminated foods. (Peterson, 2006). Aflatoxin Q_1 (AFQ_1), major metabolite of AFB_1 in *vitro* liver preparations of other higher vertebrates *(Smith, John E.*, 1991)

Fungi that produce Aflatoxin grow on crop such as peanut, wheat, corn, beans and rice. (Fratamico, 2008). Different fungi species are reduce the yield of those crops and some of these fungi produce mycotoxin. Alatoxin contamination of food highly depends on biological (biotic) and environmental (a biotic) factors that lead to mould growth and toxin production in pre-harvest and post-harvest. (Miller, 1991).

Mycotoxins are toxic ubstance produced by fungi and can be classified according to their origin, chemical structure and biological activity. Occurrence of these toxics in human food is mainly as result of direct contamination of agricultural commodity and their survival on food processing to some extent. (Smith and Moss, 1985). The incidence and level of fungal infection and Aflatoxin contamination reported vary from one geographical area to another. (Kaaya, et.al, 2006).

Aspergillusflavus and Asprgillus parasiticus infect groundnuts and develop secondary metabolites called aflatoxin. Aflatoxins are known to be hepatotoxic, carcinogenic, and teratogenic. A global significance survey carried out in different parts of the world revealed that maize and groundnut are the commodities most affected by the Aflatoxin. (Heseltine, 1986).

The amount of moisture in a grain affects both grade and storability and as a critical effect on mould growth and mycotoxin production. The effect of temperature is difficult to separated from the effect of moisture. Production of Aflatoxin is optimal at relatively high temperatures, so contamination is most acute and widespread in warm, humid climates. (Pitt and Hocking, 1997).

During handling and drying the mechanical damage to kernels makes them much more vulnerable to invasion by damage moulds including Aspergillusflavus. Cracks and breaks in grains are caused mainly during harvesting and shelling Traditional groundnut drying techniques in developing countries involving field and bare groung drying are a major source of fungal contamination (Sauer and Tuite, 1987).

Aflatoxin effects on human health organs system. Aflatoxin effects Nervous system lead to abnormal behavior and depression. Some researches confirm that Aflatoxin reduce the rate of growth, decreased resistance and susceptibility to HIV, T.B. and other opportunistic infection. (FAO, 1998).

HIV increases the toxic effect of Aflatoxin by decreasing the levels of anti- oxidant nutrients that helps detoxify Aflatoxin in the body. For the HIV virus to penetrate a cell it has overcome the barrier of cell membrane and secretary IgA, Aflatoxin reduces the level of IgA thereby easing one of the barriers. (Jolly, et.al; 2013). In a report to explore the scope of cost effective Alatoxin risk-reduction strategies in maize and groundnut value chains to improve market access and health of poor in Africa. The motivation for these studies is that the economic losses are estimated to be large. The poor producers are the least likely to adopt Aflatoxin risk reduction technologies since they lack the necessary

resources, and thus, they are the group most susceptible to Aflatoxin exposure. (www. Spring-nutrition.org>event.).

International sources of commercial peanut butter, cooking oils (e.g. olive, peanut and sesame oil), and cosmetics have been identified as contaminated with aflatoxin.– In some instances, liquid chromatography-tandem mass spectrometry (LC-MS/MS), and other analytical methods, revealed a range from 48% to 80% of selected product samples as containing detectable quantities of aflatoxin. In many of these contaminated food products, the aflatoxin exceeded the safe limits of the U.S. Food and Drug Administration (FDA), or other regulatory agency. (Li, et.al. 2009)(Mahoney, et.al. 2010)(Leong, et.al. 2011).

There are two principal techniques that have been used most often to detect levels of aflatoxin in humans.

- The first method is measuring the AFB_1-guanine adduct in the urine of subjects. The presence of this breakdown product indicates exposure to aflatoxin B_1 during the past 24 hours. This technique measures only recent exposure, however. Due to the half-life of this metabolite, the level of AFB_1-guanine measured may vary from day to day, based on diet, it is not ideal for assessing long-term exposure.
- Another technique that has been used is a measurement of the AFB_1 -albumin adducts level in the blood serum. This approach provides a more integrated measure of exposure over several weeks or months.(Stoloff,1985) (www.fao.org.com)

2. Results and Discussion

Table 1: Family members

Number of member/person	Frequency	%
2-3	29	21.5
4-6	55	40.7
More than 6	51	37.8
Total	135	100

Table No. 1. Shows distribute of the family member. 40.7 % of the family member (4-6) person.

Table 2: Education level of the household wives

Education Level	Frequency	%
Illiterate	23	17.3
Khalwa	2	1.5
Primary school	28	21.1
Secondary school	41	30.8
University	39	29.3
Total	133	100%

Table No. 2. Shows educate level of the household wives. Most housewives studied until secondary school 30%. This may be indicator for poor knowledge about uses of groundnuts paste.

Table 3: Age Classification

Age/year	Frequency	%
Less than 30	29	21
30-40	48	36.1
41-50	34	25.6
More than 60	22	16.5
Total	133	100

Table No. 3. Represents the housewife age classify. The major group their age is range 30-40 years. These are suitable for any intervention to increase awareness about uses of groundnuts paste to avoid contamination and toxic.

Table 4: Household occupation

Occupation	Frequency	%
Employee	22	16.5
Worker	8	6.0
Merchant	8	6.0
Non-employee	95	71.4
	133	100

Table No. 4. Shows the household occupy. 71.4% are employee which indicated that they can make groundnuts paste at home rather than bought it from the market if they aware about the proceeded.

Table 5: Consumption of Groundnuts/day

Amounts	Frequency	%
1bag	58	45.0
2bag	36	27.9
More	35	27.1
Total	133	100

Table No. 5. Represent the amount of groundnuts consumed at home /day. 45% of the housewife consumed 1bag of the groundnuts paste/day to be used in the family food. (1bag=30gram)

Table 6: Source of Groundnuts Paste

Sources	Frequency	%
Made at Home	12	9.2
Market	118	90.8
Total	133	100

Table No. 6. Shows the source where the groundnuts made. 90.8% of the respondents their source of the groundnuts paste bought from the market. These result approved that the housewives are not aware about the proceeded to make groundnuts paste.

Table 7: Knowledge about Aflatoxin

Knowledge	Frequency	%
Yes	30	23.4
No	98	76.6
Total	128	100

Table No. 7. Shows knowledge of the respondents towards Aflatoxin. 76.6% of the respondents are not know what Aflatoxin is and how can affects groundnuts paste. . These result approved the increase of the housewives awareness towards Aflatoxin is very important.

Table 8: Knowledge about Disease causing by Aflatoxin

Knowledge about Disease	Frequency	%
Poisoning	2	2.7
Diarrhea	6	8.1
Cancer	31	41.9
Not Know	94	47.3
Total	133	100

Table No. 8. Shows Knowledge about Disease caused by Aflatoxin. 47.3% of the respondents are not know about

disease causing by Aflatoxin and how can affects groundnuts paste. So awareness towards Aflatoxin is very important.

3. Conclusion

Knowledge, attitude and practice towards aflatoxin are very poor. Health education session should be conducted about how to select the proper groundnut and how to prepare the paste at home.

4. Recommendation

Increase the awareness of the housewives about the contamination caused by aflatoxin in the groundnuts paste. Household wives should prepared groundnuts paste at home to avoid aflatoxin and contamination to protect their family member health.

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