



JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

Eighth Session

The Hague, The Netherlands, 31 March – 4 April 2014

PROPOSAL FOR NEW WORK ON THE ESTABLISHMENT OF MAXIMUM LEVELS OF AFLATOXINS IN SPICES

(Prepared by India)

The Committee is invited to consider the proposal for new work as presented in the project document below.

1. The purpose and scope of the project:

- The purpose of the work is to ensure fair practices in international food trade by harmonising the level of aflatoxins in spices.
- The scope of the work is to establish Codex standards for maximum levels of Aflatoxin B1 and total aflatoxin level in spices.

2. Relevance and Timeliness:

Spices are produced largely in tropical climates that have high temperature, humidity and rainfall. These climatic conditions are favourable to mycotoxin production. Aflatoxins are considered the most important group of mycotoxins in the world's food supply and are produced in nature primarily by *Aspergillus* species. Aflatoxins consist of a group of approximately 20 related secondary fungal metabolites, although only aflatoxins B1, B2, G1 and G2 are normally found in foods.

Aflatoxins were evaluated by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) at its 31st, 46th, 49th and 56th meetings. The JECFA, during its 49th meeting held in 1997, considered estimates of the carcinogenic potency of aflatoxins and the potential risks associated with their intake. Also the committee concluded that there is no significant difference in risk to human health between the maximum levels of 10 µg/kg and 20 µg/kg for Aflatoxin B1 in food (WHO, 1998).

At its 64th meeting (2005), JECFA decided that evaluations on compounds that are both genotoxic and carcinogenic, such as aflatoxins, should be based on the estimation of Margins of Exposure (MoE). The MoE is defined as the ratio between a toxicological threshold and the intake. MoE lower than 10,000 may be indicative of a public health concern (EFSA, 2005).

The hazardous nature of aflatoxin to humans and animals has necessitated the need for establishment of control measures and tolerance levels by national and international authorities. But different countries have different regulations for aflatoxins. The maximum levels of aflatoxin fixed by some countries for spices/all food products are annexed. The value of maximum levels of aflatoxin set by various countries ranges from 1 µg/kg to 35 µg/kg (Annex). The lack in harmonisation has the potential to bring in impediments to fair trade.

The trade volume and production figures from FAOSTAT and INTRACEN for the period from 2008 to 2012 reveals that mostly traded spices are chilli, pepper, ginger, nutmeg and mace. Rapid Alert System for Food and Feed (RASFF) notifications for mycotoxins, especially aflatoxin, indicates the export rejections of herbs and spices (Table 1). Considering the above mentioned facts, there is a need to establish an international standard for maximum level of aflatoxin in spices.

TABLE 1

RASFF Notifications on Mycotoxins

Year	2008	2009	2010	2011	2012
Total Mycotoxin notification (for food and feed)	933	669	688	635	525
Aflatoxin notification (for food and feed)	902	638	649	585	484
Aflatoxin notification for herbs and spices	26	23	96	51	33

3. The main aspects to be covered:

The following aspects need to be covered:-

Establish the maximum level of aflatoxin (for Aflatoxin B1 and total aflatoxins) in different spices based on toxicological evaluation of aflatoxins in each variety of spices taking into consideration the average daily intake of spices.

The GEMS/Food Regional Diets (2006) gives the average daily intake of spices (grams/day) by various regions of the world is given below:

TABLE 2

Commodity	DIETS											
	A	B	C	D	E	F	G	H	I	J	K	L
PIMENTO FRUIT	2.5	0.4	1	0.5	0.6	0.2	1.3	1.1	1	1	0.1	0.2
GINGER ROOT	0.2	0	0.2	0	0.1	0.1	0.6	0	0	1.4	0.2	1.5
ANISE, BADIAN & FENNEL	0	0.2	0.7	0.1	0.3	0.1	0.1	0.6	0.1	0	0.1	0.1
NUTMEG, MACE & CARDAMOM	0	0	0.1	0	0.1	0.1	0	0	0	0	0	0
PEPPER (BLACK & WHITE)	0	0.1	0.2	0.1	0.4	0.3	0.1	0	0.1	0	0.1	0.1
SPICES(Not Elsewhere Specified)	0.1	0.3	0.3	0.1	0.1	0.3	0.8	0.1	0.1	0.2	0	0.1
TOTAL SPICES	2.8	1	2.5	0.8	1.6	1.1	2.9	1.8	1.3	2.6	0.5	2

Source: Regional per Capita Consumption of Raw and Semi-processed Agricultural Commodities, (WHO, 2006)

The average daily intake (grams/day) of spices and condiments by various cluster groups of GEMS/Food Regional Diets (2012) are given below:

TABLE 3

CLUSTER GROUPS	G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G14	G15	G16	G17
Spices and condiments	2.1	1.3	2	6.5	4.4	2	1.3	1.3	1.8	1.9	3.3	2.5	2.2	7	3.3	0.5	1.4
Tree nuts(excl. Ground nut)	3.6	3.3	5.1	8.6	15.9	9.3	5.2	7	13.2	4.2	9.2	28.3	6.7	157.2	4	0	347.3

Source: Regional per Capita Consumption of Raw and Semi-processed Agricultural Commodities, (WHO, 2012)

Spices are used as flavouring, colouring and seasoning agents in food. The global daily intake of spices varies much in various clusters and the average daily intake is comparatively less as could be seen from Table 3 above. Also the evaluations on aflatoxins should be based on the Margins of Exposure (MoE) which is the ratio between toxicological threshold and the daily intake. Hence this must be considered while drafting the limits for aflatoxin in spices.

4. Assessment against the Criteria for the establishment of work priorities:

a) *Consumer protection from the point of view of health, food safety, ensuring fair practice in the food trade and taking into account the identified needs of the developing countries.*

- The new work proposal for the establishment of maximum level for aflatoxins in spices will ensure consumer protection. This work will also ensure fair practices in food trade by taking into account the identified needs of developing countries who export majority of spices.

b) *Diversification of national legislation and apparent resultant or potential impediments to international trade.*

- Differences in national legislation apparently results a hindrance to international trade. With a view to promoting international trade, this work will provide harmonised standards for the maximum level of aflatoxin in spices on the basis of scientific studies.

c) *Work already undertaken by other organisations in this field*

- The work already done by JEFCA in the 49th meeting and JEFCA's decision in its 64th meeting, that the level of aflatoxins should be established on the basis of Margin of Exposure (MoE) serves as the base reference for the current proposal.

5. Relevance to Codex Strategic Goals

The work proposed falls under Codex Strategic Goals 1 and 2 as explained below:

Goal 1: Establish international food standards that address current and emerging food issues.

- From a regulatory standpoint, aflatoxins are considered unavoidable contaminants in foods since they cannot be prevented or eliminated by current good agricultural practices. Establishing harmonised international standards helps importing countries to secure regular supplies of commodities and helps exporting countries to find markets for their products.
- This work will harmonise the levels for aflatoxins in spices with a view to promoting maximum application of Codex Standards for ensuring the safety of the health of consumers as well as in ensuring fair practices in food trade.

Goal 2: Ensure the application of risk analysis principles in the development of Codex standards.

- The proposed work will help to establish risk management options based on scientific evaluation by expert bodies.

6. Information on the relationship between the proposal and other existing Codex documents

None

7. Identification of any requirement for any availability of expert scientific advice

Scientific Risk Assessment by JECFA might be required.

8. Identification of any need for technical input to the standard from external bodies

None anticipated at this stage.

9. Proposed Time Schedule.

The work will commence after the Codex Alimentarius Commission approves the new work in July 2014. The proposed draft maximum level for total aflatoxins in spices will be considered by the 8th Session of the CCCF with a view to its adoption in 2015 or 2016, depending upon the availability of scientific advice.

ANNEX
AFLATOXIN LEVELS IN VARIOUS COUNTRIES

Sl. No.	Country	Product	AflatoxinB1 (µg/kg)	Aflatoxin Total (µg/kg)
1	Armenia	All foods	5	
2	Austria	Spices	5	10
3	Barbados	All foods		20
4	Belgium	Spices*	5	10
5	Brazil	All Foodstuffs		30
6	Bulgaria	Spices	2	5
7	Chile	All foods		5
8	Colombia	All foods		10
9	Croatia	Spices	30	
10	Cuba	All foods		5
11	Cyprus	Spices*	5	10
12	Czech Republic	Spices	20	
13	Denmark	Spices*	5	10
14	European Union	Spices*	5	10
15	Finland	All Spices		10
16	France	Spices*	5	10
17	Germany	Spices*	5	10
18	Greece	Spices*	5	10
19	Honduras	All foods (B2G1G2 only)		1
20	Hong Kong	All foodstuffs	15	15
21	Hungary	Spices*	5	10
22	Iceland	Spices*	5	10
23	India	All Foods		30
24	Indonesia	Spices		20
25	Ireland	Spices*	5	10
26	Italy	Spices*	5	10
27	Jamaica	Foods and Grains		20
28	Japan	All foods	10	
29	Latvia	Food products of plant and animal origin	5	
30	Liechtenstein	Spices*	5	10
31	Lithuania	Spices*	5	10
32	Luxembourg	Spices*	5	10
33	Malaysia	All foods		35
34	Malta	Spices	5	10

Sl. No.	Country	Product	AflatoxinB1 (µg/kg)	Aflatoxin Total (µg/kg)
35	Mauritius	All foods	5	10
36	Morocco	All foods	10	
37	Netherlands	Spices*	5	10
38	Nigeria	All foods	20	
39	Norway	Spices*	5	10
40	Poland	Spices*	5	10
41	Portugal	Spices*	5	10
42	Romania	Spices*	5	10
43	Salvador	All Foods		20
44	Serbia and Montenegro	Spices	30	
45	Slovenia	Spices*	5	10
46	South Africa	All food stuffs	5	10
47	Spain	Spices*	5	10
48	Sri Lanka	All foods		30
49	Sweden	Spices*	5	10
50	Switzerland	Spices excluding Nutmeg	5	10
		Nutmeg	10	20
51	Taiwan	Other foods		10
52	Thailand	All foods		20
53	Tunisia	All foods	2	
54	Turkey	Spices*	5	10
55	UK and Northern Ireland	Spices*	5	10
56	USA	All food expect milk		20
57	Uruguay	All foods and spices	5	20
58	Vietnam	All Foods		10
59	Zimbabwe	Foods	5	9

Spices*: *Capsicum spp.* (dried fruits EU8 thereof, whole or ground, including chillies, chilli powder, cayenne and paprika); *Piper spp.* (fruits thereof, including white and black pepper); *Myristica fragrans* (nutmeg); *Zingiber officinale* (ginger); *Curcuma longa*

Source: *Worldwide regulations for mycotoxins in food and feed in 2003 (FAO)*

Note: Bahrain, Iraq, Qatar, Pakistan, Panama, Ghana, Nicaragua, Antigua, Barbuda, Bahamas, Benin, Bolivia, Burkina Faso, Cameroon, Ecuador, Ethiopia, Myanmar, Trinidad, Tobago, Uganda and UAE have no regulations.
