

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
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World Health
Organization

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Agenda Item 8

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ORIGINAL LANGUAGE ONLY

JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON CONTAMINANTS IN FOODS

17th Session
15-19 April 2024

SAMPLING PLAN FOR TOTAL AFLATOXINS AND OCHRATOXIN A IN CERTAIN SPICES BASED ON COMMENTS SUBMITTED

(Prepared by the Chair of the EWG on the Sampling Plans for Total Aflatoxins and Ochratoxin A in certain spices, India)

ANNEX

Sampling Plan

Maximum levels for total aflatoxins and ochratoxin A in nutmeg, dried chili and paprika, ginger, pepper, and turmeric and associated sampling plans

A) Spices with large particle size (Whole nutmeg, whole dried chilli and whole paprika)

In case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following table 1. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight by a maximum of 20 %.

Table 1

Subdivision of lots into sublots depending on product and lot weight

Commodity	Lot weight (tonne)	Weight or number of sublots	No incremental samples	Aggregate sample weight (kg)
spices with large particle size	≥ 500	100 tonnes	100	{20} {10}
	> 125 and < 500	5 sublots	100	{20} {10}
	≥ 15 and ≤ 125	25 tonnes	100	{20} {10}
	< 15	—	10-100 (*)	{20} {10}

(*) Depending on the lot weight — see table 2.

Each sub-lot shall be sampled separately

Number of incremental samples: 100

Weight of the aggregate sample = 20 kg which shall be mixed and to be divided into two equal laboratory samples of 10 kg before grinding.

Each laboratory sample of 10 kg shall be separately ground finely and mixed thoroughly to achieve complete homogenisation

(*) ~~The number of incremental samples of 100 g to be taken depends on the weight of the lot, with a minimum of 10 and a maximum of 100. The number of incremental samples of 200 g to be taken depends on the weight of the lot, with a minimum of 10 and a maximum of 100.~~

The figures in the following table 2 may be used to determine the number of incremental samples to be taken and the subsequent division of the aggregate sample.

Table 2

Number of incremental samples to be taken depending on the weight of the lot and number of subdivisions of the aggregate sample

Lot weight (tonnes)	No of incremental samples	Aggregate sample Weight (kg)	No of laboratory samples from aggregate sample
≤ 0.1	10	2 1	1 (no division)
> 0.1 – ≤ 0.2	15	3 1.5	1 (no division)
> 0.2 – ≤ 0.5	20	4 2	1 (no division)
> 0.5 – ≤ 1.0	30	6 3	1 (no division)
> 1.0 – ≤ 2.0	40	8 (< 12 kg) 4	1 (no division)
> 2.0 – ≤ 5.0	60	12 6	2 1
> 5.0 – ≤ 10.0	80	16 8	2 1
> 10.0 – ≤ 15.0	100	20 10	2 1

~~No of incremental samples~~

~~Weight of the aggregate sample =? 20 kg which shall be mixed and if necessary divided into two equal laboratory samples of ? 10 kg before grinding~~

~~In cases where the aggregate sample weights are less than 20 kg, the aggregate sample shall be divided into laboratory samples according to following guidance:~~

~~< 12 kg: no division into laboratory samples;~~

~~≥? 12 kg division into two laboratory samples.~~

~~Each laboratory sample shall be separately ground finely and mixed thoroughly to achieve complete homogenisation~~

~~[Decision rule: If the aflatoxin test result is less than or equal to the ML in both test samples, then accept the lot.~~

~~Otherwise reject the lot.]~~

~~["Decision rule: If the aflatoxin test result of average of two laboratory samples in lots divided into two laboratory samples, or laboratory sample result in lots represented by a single laboratory sample is less than or equal to the ML, then accept the lot. Otherwise reject the lot."]~~

~~The accept/reject level is a level usually equal to the Codex maximum level.~~

B) Spices with small particle size (crushed/cracked/broken/flakes of nutmeg, dried chilli and paprika)

In the case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following Table 3. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight by a maximum of 20 %.

Table 3

In case of large lots , subdivision of lots into sublots depending on product and lot weight

Commodity	Lot weight (tonnes)	Weight or number of sublots	Number of incremental samples	Aggregate sample Weight (kg)
Spices	≥ 15	25 tonnes	100	10
	< 15	—	5-100 (*)	0,5-10

(*) Depending on the lot weight — see Table 4

Each subplot shall be sampled separately.

Number of incremental samples: 100, incremental sample size= 100g. Weight of the aggregate sample = 10 kg.

(*) For lots of spices less than 15 tonnes the sampling plan shall be used with 5 to 100 incremental samples, depending on the lot weight, resulting in an aggregate sample of 0,5 to 10 kg.

The figures in the following Table 4 can be used to determine the number of incremental samples to be taken.

Table 4

Number of incremental samples to be taken depending on the weight of the lot of spices

Lot weight (tonnes)	Number of incremental samples	Aggregate sample weight (kg)
≤ 0.01	5	0.5
> 0.01-≤ 0.1	10	1
> 0.1-≤ 0.2	15	1.5
> 0.2-≤ 0,5	20	2
> 0,5-≤ 1.0	30	3
> 1.0-≤ 2.0	40	4
> 2.0-≤ 5.0	60	6
> 5.0-≤ 10.0	80	8
> 10.0-≤ 15.0	100	10

C) Powdered spices (Obtained by grinding nutmeg, dried chilli and paprika)

In the case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following Table 5. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight by a maximum of 20 %.

Table 5

Subdivision of lots into sublots depending on lot weight

Commodity	Lot weight (tonnes)	Weight or number of sublots	Number of incremental samples	Aggregate sample Weight (kg)
Powdered spices	≥ 15	25 tonnes	50	2
	< 15	—	3 – 50 (*)	0.1 – 2.0
(*) Depending on the lot weight — see Table 6				

- each subplot shall be sampled separately

- number of incremental samples: 50. Incremental sample size: [40 g] [80g]. Weight of the aggregate sample: 2 kg

(*) For lots of powdered spices less than 15 tonnes the sampling plan shall be used with 3 to 50 incremental samples, depending on the lot weight, resulting in an aggregate sample of [0,1 to 2.0 kg] [2.4 kg to 4 kg].

The figures in the following Table 6 can be used to determine the number of incremental samples to be taken.

Table 6

Minimum number of incremental samples to be taken depending on the weight of the lot of powdered spices

Lot weight (tonnes)	Minimum number of incremental samples	Minimum aggregate sample weight (kg)
≤ 0.1	3	0.1 <u>[0.24]</u>
> 0.1 - ≤ 0.5	10	0.4 <u>[0.8]</u>
> 0.5 - ≤ 5.0	25	1.0 <u>[2]</u>
> 5.0 - ≤ 10.0	35	1.4 <u>[2.8]</u>
> 10.0 - ≤ 15.0	50	2.0 <u>[4]</u>

Method performance criteria

Table 7

Method performance criteria for the analysis of total aflatoxins and ochratoxins A in spices

Commodity	Analyte	ML (µg/kg)	LoD (µg/kg)	LoQ (µg/kg)	Precision (%)	Minimal applicable range (µg/kg)	Recovery (%)
<u>Chilli pepper, Nutmeg</u>	<u>AF B1+B2+G1+G2</u>	<u>20</u>	<u>≤4</u>	<u>≤8</u>	<u>≤44</u>	<u>11.2-28.8</u>	<u>60-115</u>
	<u>AFB1</u>	<u>-</u>	<u>≤1</u>	<u>≤2</u>	<u>≤44</u>	<u>2.8-7.2</u>	<u>40-120</u>
	<u>AFB2</u>	<u>-</u>	<u>≤1</u>	<u>≤2</u>	<u>≤44</u>	<u>2.8-7.2</u>	<u>40-120</u>
	<u>AFG1</u>	<u>-</u>	<u>≤1</u>	<u>≤2</u>	<u>≤44</u>	<u>2.8-7.2</u>	<u>40-120</u>
	<u>AFG2</u>	<u>-</u>	<u>≤1</u>	<u>≤2</u>	<u>≤44</u>	<u>2.8-7.2</u>	<u>40-120</u>
<u>Ochratoxin A</u>	<u>OTA</u>	<u>20</u>	<u>≤4</u>	<u>≤8</u>	<u>≤44</u>	<u>11.2-28.8</u>	<u>60-115</u>