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Date: 12/29/2014

GAIN Report Number: CH14057

Voluntary Public

China's Maximum Levels for Mycotoxins in Foods

Post: Beijing

Report Categories:

FAIRS Subject Report

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Report Highlights:

On April 20, 2011, China released the National Food Safety Standard of Maximum Levels of Mycotoxin in Foods (GB 2761-2012), which became effective on October 20, 2011. This standard sets limits for Aflatoxin B1, Aflatoxin M1, Deoxynivalenol, Patulin, Ochratoxin A and Zearalenone in foods.

In response to multiple inquiries, this report provides an unofficial translation of China's existing standard.

General Information:

National Food Safety Standard of Maximum Levels of Mycotoxins in Foods Foreword

This standard replaces Maximum Levels of Mycotoxins in Foods (GB 2761-2005) and the maximum levels of mycotoxins in the Hygienic Standard for grains (GB 2715 - 2005).

This standard modifies the GB 2761-2005 in the following aspects:

- Modifies the standard name;
- Adds definitions for “Edible Parts”;
- Adds principles of (standard) application;
- Adds index of Ochratoxin A and Zearalenone;
- Modifies the limits of Aflatoxin B₁, Aflatoxin M₁, Deoxynivalenol and patulin;
- Modifies the testing methods for Aflatoxin B₁, Aflatoxin M₁ and Deoxynivalenol ;
- Adds Appendix A.

National Food Safety Standard of Maximum Levels of Mycotoxins in Foods

1 Scope

This standard sets limits for Aflatoxin B₁, Aflatoxin M₁, Deoxynivalenol, Patulin, Ochratoxin A and Zearalenone in foods.

2 Terminologies and definitions

2.1 Mycotoxin

The toxic secondary metabolite produced by organisms of the fungi in the process of growth and reproduction.

2.2 Edible part

The remaining part for edible use after mechanical processing, which remove the non-edible part (such as grain husk, fruit peeling, nuts cracking, removing bones in meat/fish, removing shell of shellfish).

Note 1: removing the non-edible part shall not apply any non-chemical means (such as refining of crude vegetable oil);

Note 2: quantity of the edible parts may vary when producing different products by different techniques using the same food materials. For example, the edible part could be 100% when

processing cereal and whole-wheat flour from wheat, while the edible part is calculated by the actual flour extraction rate when producing wheat flour from wheat.

2.3 Limit

Maximum level of mycotoxin in the edible parts of food materials and/or finished food products.

3 Principles of (standard) application

3.1 Regardless of existence of the mycotoxin limits, the food producers and processors shall take control measures to keep the mycotoxin content at the minimum level.

3.2 This standard lists the mycotoxins that may pose high risks to the public health, and the foods with the mycotoxin limits are foods that pose higher impact on consumers' dietary exposure.

3.3 Explanation of the Food Categories (Appendix A) is for defining scope of application of the mycotoxin limits, and is only applicable to this standard. When a mycotoxin limit is applied to a certain food category, all types of foods in the food category are subject to the limit unless otherwise specified.

3.4 Maximum levels of mycotoxins in foods are calculated by the edible parts of the food unless otherwise specified.

3.5 Maximum levels of mycotoxins in dried foods are converted by dehydration rate or the concentration rate. The dehydration rate or the concentration rate could be determined by analysis of the food, information provided by the producer, or other obtainable information/data.

4 Specifications

4.1 Aflatoxin B₁

4.1.1 Please refer to Table 1 for Aflatoxin B₁ limits in foods.

Table 1 Aflatoxin B₁ limits in foods

Food Category (name)	Limit (µg /kg)
Grains and grain products	
Corn, corn flour (grits, flake) and corn products	20
Paddy rice ^a , brown rice, rice	10
Wheat, barley, Other grains	5.0
Wheat flour, cereal, other husked grains	5.0
Beans and bean products	
Fermented bean products	5.0
Nuts and seeds	

Food Category (name)	Limit (µg /kg)
Peanut and its products	20
Other cooked nuts and seeds	5.0
Fat and its products	
Vegetable oil and fat (with the exception of peanut oil, corn oil)	10
Peanut oil, corn oil	20
Condiment	
Soy sauce, vinegar, fermented paste (using grains as the major materials)	5.0
Foods intended for special dietary uses	
Formula foods for infants and young children	
Infant Formula ^b	0.5 (in powdered product basis)
Older infants and young children formula ^b	0.5 (in powdered product basis)
General standard of formulas for special medical purposes intended for infants	0.5 (in powdered product basis)
Complementary foods for infants and young children	
Cereal-based complementary foods for infants and young children	0.5
^a Paddy rice in the brown rice basis.	
^b Products in which soybean and soy protein are the major material.	

4.1.2 Testing methods: Formula foods for infants and young children and Complementary Foods for Infants and Young Children shall be tested by using methods provided in GB 5009.24; other foods shall be tested by using methods provided in GB/T 18979.

4.2 Aflatoxin M₁

4.2.1 Please refer to Table 2 for Aflatoxin M₁ limits in foods.

Table 2 Aflatoxin M₁ limits in foods

Food Category (name)	Limit (µg /kg)
Milk and milk products ^a	0.5
Foods intended for special dietary uses	
Infant formula ^b	0.5 (in powdered product basis)
Older infants and young children formula ^b	0.5 (in powdered product basis)
General standard of formulas for special medical purposes intended for infants	0.5 (in powdered product basis)
^a Milk powders converted from raw milk.	
^b Products produced from milk and milk protein products.	

4.2.2 Testing methods: formula foods for infants and young children shall be tested by using methods provided in GB 5009.24; milk and milk products shall be tested by using methods provided in GB 5413.37.

4.3 Deoxynivalenol

4.3.1 Please refer to Table 3 for Deoxynivalenol limits in foods.

Table 3 Deoxynivalenol limits in foods

Food Category (name)	Limit (µg /kg)
Grains and grain products	
Corn, Corn flour (grits, flake)	1000
Barley, wheat, cereal, wheat flour	1000

4.3.2 Testing methods: by using methods provided in GB/T 23503

4.4 Patulin

4.4.1 Please refer to Table 4 for Patulin limits in foods.

Table 4 Patulin limits in foods

Food Category (name) ^a	Limit (µg /kg)
Fruit and its products	
Fruit products (with the exception of hawthorn sheet)	50
Beverages	
Fruit and vegetable juice	50
Liquor	50
^a Only limited to products produced from apple and howthorn.	

4.4.2 Testing methods: by using methods provided in GB/T 5009.185.

4.5 Ochratoxin A

4.5.1 Please refer to Table 5 for Ochratoxin A limits in foods.

Table 5 Ochratoxin A limits in foods

Food Category (name)	Limit µg /kg
Grains and grain products	
Grains ^a	5.0
Milled grain products	5.0
Beans and bean products	
Beans	5.0
^a Paddy rice in the brown rice basis.	

4.5.2 Testing methods: by using methods provided in GB/T 23502.

4.6 Zearalenone

4.6.1 Please refer to Table 6 for Zearalenone limits in foods.

Table 6 Zearalenone limits in foods

Food Category (name)	Limit µg /kg
Grains and grain products	
Wheat, Wheat flour	60
Corn, Corn flour (grits, flake)	60

4.6.2 Testing methods: by using methods provided in GB/T 5009.209.

Appendix A: Explanation of the Food Categories

A.1 Please refer to the Table A.1 for explanation of the food categories.

Table A.1 Explanation of the Food Categories

Fruit and its products	<p>Fresh fruit (Unprocessed fruit, , surface-treated, Peeled or pre-cut, frozen fruit)</p> <ul style="list-style-type: none"> Berries and other small fruit Other fresh fruit (including sugar cane) <p>Fruit products</p> <ul style="list-style-type: none"> Canned fruit Dried fruit Fruit processed with vinegar, oil, or salt Fruit jam (paste) Candied and preserved fruit (including hawthorn strips) Fermented fruit product Cooked or fried fruit Fruit dessert Other fruit products
Grains and grain products (not including baked food)	<p>Grains</p> <ul style="list-style-type: none"> Paddy rice Corn Wheat Barley Other grains [such as millet, sorghum, rye, oat, buckwheat, etc.] <p>Milled grain products</p> <ul style="list-style-type: none"> brown rice rice Wheat flour Corn flour (grits, flake) Cereal Other husked grains (such as millet, sorghum, barley, broomcorn millet, etc.) <p>Grain products</p> <ul style="list-style-type: none"> Rice products (such as rice flour, glutinous rice ball flour and other products, etc.) Wheat flour product <ul style="list-style-type: none"> Fresh pastas and noodles and similar products (e.g. unboiled noodles, and “skins” or crusts for dumplings, wontons, shuo mai) Dried pastas and noodles and similar products Fermented wheat flour product Batters (e.g. for breading or batters for fish or poultry), breader, frying powder Gluten Other wheat flour products Corn products Other grain products (such as wheat or rice flour products with fillings, canned assorted cereal porridge)

Beans and bean products	Beans (dried beans, and powder of milled dry beans) Bean products Non-fermented bean products (such as soy milk, bean curd, dried bean curd, bean curd stick, cooked bean products, puffed soybean protein food, soybean meat, etc.) Fermented bean products (such as fermented bean curd, natto, fermented soybeans and products) Canned beans
Nuts and seeds	Fresh nuts and seeds Tree nuts Oil seeds (exclusive of grain seeds and beans) Seeds for beverages and sweeteners (such as cocoa and coffee beans, etc.) Nuts and seeds products cooked nuts and seeds (with and without shell) Coated nuts and seeds canned nuts and seeds Nuts and seeds pastry, including peanut butter, etc. Other nuts and seeds products (such as pickled kernels)
Milk and milk products	Raw milk Pasteurized milk Sterilized milk Modified milk Fermented milk Evaporated milk and sweetened condensed milk Milk powders Whey powder and whey protein powder Cheese Process(ed) cheese Other dairy products
Fat, oil, and its products	Vegetable oil and fat Animal fats (such as lard, tallow, fish oil, cream, butter, anhydrous milk fat, etc.) Fat products Hydrogenated vegetable oil and products mainly made from hydrogenated vegetable oil (such as margarin, shortening, etc.) Blend oil Other fat products
Condiment	Salt Tasty agent and taste aid Vinegar Soy sauce Bean paste, wheat paste and derivatives Cooking wine Spices Spices and powdered spices Spice oil

Condiment	<p>Spiced pastes (e.g. mustard seasonings, wasabi) Other spice processed product Aquatic Dressing Fish condiment (such as fish gravy, etc.) Other aquatic dressing (such as oyster oil, shrimp oil, etc.) Blended condiments (such as solid mixes for soups and broths, chicken essence, chicken powder, mayonnaise, salad dressing, flavored clear soup, etc.) Other condiment</p>
Drinks	<p>Packaged drinking water Mineral water Drinking distilled water Other packaged drinking water Fruit and vegetable juice (such as apple juice, apple cider vinegar, hawthorn juice, hawthorn vinegar, etc.) Fruit and vegetable juice (pulp) Concentrated fruit and vegetable juice (pulp) Other fruit and vegetable juice (nectar) drink (including fermented product) Protein containing drink Milk containing drink (fermented milk containing drink, Recombined milk containing drink, Lactobacillus drink) Plant protein containing drink Blended protein containing drink Carbonated drink Tea drink Coffee drink Plant drink Flavored drink Drink for special usage (such as sports drink, nutritional drink, etc.) Powdered drink (including instant coffee) Other drink</p>
Alcoholic beverage	<p>Distilled spirit (such as Liquor, Brandy, Whisky, Vodka, rum, etc.) Integrated alcoholic beverage Fermented Alcoholic Beverages (such as Grape wine, Chinese rice wine, Fruit wine, beer, etc.)</p>
Foods intended for special dietary uses	<p>Formula foods for infants and young children Infant Formula Older infants and young children formula General Standard of Formulas for Special Medical Purposes Intended for Infants Complementary Foods for Infants and Young Children Cereal-Based Complementary Foods for Infants and Young Children Canned Complementary Foods for Infants and Young Children Other foods intended for special dietary uses</p>