CODEX ALIMENTARIUS COMMISSION

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World Health Organization

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Agenda Item 5.1 **CX/SCH 24/7/07 Add.1**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON SPICES AND CULINARY HERBS

Seventh Session

Kochi Kerala, India

29 January - 02 February 2024

DISCUSSION PAPER ON THE DEVELOPMENT OF A STANDARD FOR DRIED ROOTS, RHIZOMES, BULBS –GALANGAL; GREATER GALANGAL; LESSER GALANGAL; HORSERADISH ROOT; ONIONS AND SHALLOTS

(Submitted by the United States of America)

Background

1. The First Session of the Codex Committee on Spices and Culinary Herbs (CCSCH1) in 2014, discussed Work Management Modalities and agreed that a maximum of four standards per session would be developed; however, over its four sessions only three standards were developed. If the Work Management Modalities of four standards per session is applied, the standardization process would take a minimum of 23 sessions or 36 years to complete considering there are 109 named spices and culinary herbs. Even if the Committee succeeds in developing four standards at every session, which is unlikely based on previous sessions, and this is a very lengthy and arduous process.

2. CCSCH3 (2017) accepted the proposal by the United States to prepare a discussion paper on developing group standards derived from one of the six broad groups derived from plant parts for Spices and Culinary Herbs (SCH). The discussion paper was presented and discussed at CCSCH4 (2019), noted the agreement of the United States to continue updating the group layout template, considering the discussions undertaken at CCSCH4, and to include the grouped approach for discussion and completion at CCSCH5. This format groups spices and herbs into categories based on the part of the plant used as spice or herb.

Necessity to develop the group standard.

3. To continue standard development in the group format, the United States proposes a standard for the “Dried Roots, Rhizomes, Bulbs” based on the CCSCH Grouping of Spices and Culinary Herbs. The group standard will facilitate the CCSCH plenary sessions to allow the focus on chemical characteristics (taste/flavor) and physical characteristics /tolerances for defects allowed (safety and quality).

4. This approach, which has been commended by CCEXEC and CAC, will facilitate the work of CCSCH to develop standards in a timely manner to meet the needs of the SCH trade and complete of the Committee’s mandate. This proposal utilizes the “Dried Roots, Rhizomes, Bulbs” and this includes galangal; greater galangal; lesser galangal; horseradish root, onions, and shallots. It is important to note that standards for some spices covered under this category (i.e., dried garlic, dried ginger, and turmeric) have already been completed or are under consideration by CCSCH.

5. The group approach to standard development will allow CCSCH to become more efficient, functional, and responsive to the needs of governments, industry, and external stakeholders by delivering standards a timely manner. The resources of CCSCH plenary sessions and its working groups can be spent researching and validating the chemical and physical characteristics of each product and use less time discussing redundant standardized/templated text.

6. To realise the anticipated efficiency of the Committee, CCSCH need to reflect and address the challenge of the availability of trade data of such low volume but high value commodities. These group standards rely on exporting countries to provide their data to ensure a robust standard. Even as far back as CCSCH1, herbs and spices, when assessed against the Codex criteria found in the Procedural Manual, are difficult to obtain trade data. Trade data for herbs and spices is not always commodity specific and many do not have an individual Harmonised System code. The United States of America has prepared the project document (Appendix I) for consideration by CCSCH7, along with the proposed draft standard for information.

Recommendations

7. CCSCH7 is invited to consider the new work proposal for developing a standard for dried roots, rhizomes, bulbs – galangal, greater galangal, lesser galangal, horseradish root, onions, and shallots. Project document is attached as Appendix I to this document.

Appendix I

PROJECT DOCUMENT

PROPOSAL FOR THE DEVELOPMENT OF A STANDARD FOR DRIED ROOTS, RHIZOMES, BULBS– GALANGAL; GREATER GALANGAL; LESSER GALANGAL; HORSERADISH ROOT; ONIONS AND SHALLOTS

1. PURPOSE AND SCOPE OF THE STANDARD

The purpose of this new work is to develop a standard for spices under the group dried roots, rhizomes, and bulbs (galangal; greater galangal; lesser galangal; horseradish root; onions and shallots). This group standard will help expedite the work of the CCSCH and provide the much-anticipated standards for this important product group.

2. RELEVANCE AND TIMELINESS

Spices and culinary herbs are mainly used as condiments or ingredients for imparting taste/flavor to food and beverages and are not used for caloric content. The chemical composition for imparting flavor and consumer safety characteristics are the two most important requirements which should be the CCSCH's focus in developing standards. Developing this group of spice standards for galangal, greater galangal, lesser galangal, horseradish root, onions, and shallots makes efficient use of the CCSCH and its members' time and resources. The grouping format for spices and culinary herbs will allow the Committee to focus on the chemical characteristics (taste/flavor) and physical characteristics/tolerances for allowed defects (safety and quality) and thus enabling Spices and Culinary herbs (SCH) to be developed in a timely manner to address current quality and safety problems within international trade.

3. MAIN ASPECTS TO BE COVERED

The main aspects to be covered in the proposed draft standard are the chemical (taste/flavor) and physical (safety and quality) characteristics of the named spices. The standard will include a section on General Requirements that includes text common to all products as well as any specific requirements for individual commodities covered under the group. In general, the following will be covered:

1. Scope and 2. Product Definition: The specific names of standardized products are not indicated in the Scope, but instead they are included in Section 2.1. "Product Definition" where the six named products will be listed in a table with their general, scientific, and subgroup names.

2.2 Styles: Section 2.2 is written in a broad manner that will apply to all products within the group; however, as in all other texts, this section can be amended to reflect the style/form characteristics of a specific product.

3.2.3. Classification: The three quality classes (Extra, Class I & Class II) would not be included because (i) they are not internationally accepted, (ii) the increasing acceptance that classification should be left to contractual arrangements between traders, and (iii) the general premise that CCSCH standards should establish minimum requirements for trade and consumer safety.

Sections 3 to 9: These sections include criteria on labeling, hygiene, contaminants, food additives, and other safety and quality factors which are consistent for all spices.

Annexes on Chemical and Physical Characteristics:

Two tables, one for chemical characteristics and the other for physical characteristics, form these annexes. Each quick reference table will have the common product name listed in the same sequence along with the necessary chemical and physical requirements.

4. ASSESSMENT AGAINST THE CRITERIA FOR THE ESTABLISHMENT OF WORK PRIORITIES

(a) Volume of production and consumption in individual countries and volume and pattern of trade between countries.

Table 1: Volume of production and consumption in individual countries and volume and pattern of trade between countries

	Common name	Top Producers and Trade Patterns between countries	Trade Volume	Consumption	Export Value ($USD)	Imported Value ($USD)
1	Galangal				India - CY2022 - $1.38M India – CY2021 - $930K	
2	Greater galangal					
3	Lesser galangal					
4	Horseradish root					
5	Onion/ Shallot[1]				U.S. – CY22 - $39K U.S. – CY19 - $32K	U.S. – CY22 - $5.01M U.S. – CY22 - $3.04M

CY= Calendar year, K= 1000

b. Diversification of national legislations and apparent resultant or potential impediments to international trade

At present, the quality and safety characteristics are based on existing industry trade practices and regulatory requirements from existing national and international standards and regulations, including the following:

- Agmark India
- European Spice Association (ESA) - Quality Minima Document Rev.5
- International Organization for Standardization (ISO)
- America Spice Trade Association (ASTA) Cleanliness Specifications
- United States Food and Drug Administration (FDA) Defect Action Levels
- Bureau of Indian Standards

c. International or regional market potential

International market potential

d. Amenability of commodities to standardization

The group standard for rhizomes, roots and bulb addresses the aspects related to the quality, safety, and labeling, with a view to protect consumers and facilitate trade. Given the special characteristics of each of the products, the physical and chemical characteristics will be established.

e. Coverage of the main consumer protection and trade issues by existing or proposed general standards

The group standard will allow the Committee to focus on quality, food safety, and ensuring fair practices in the food trade.

[1] .R.M. Swamy, R. Veere Gowda, 22 - Leek and shallot, Editor(s): K.V. Peter, In Woodhead Publishing Series in Food Science, Technology and Nutrition, Handbook of Herbs and Spices, Woodhead Publishing, 2006, Pages 365-389.

The standard will meet general criterion about consumer protection and fair trade practice by:

- Promotion of consumer protection by stipulating requirements for quality of dried roots, rhizomes, and bulbs – galangal, greater galangal, lesser galangal, horseradish root, onions, and shallots;
- Ensuring fair food trade practice, referring to proper product name and definition.

f. Number of commodities which would need separate standard indicating whether raw, semi-processed or processed

The group of rhizomes, roots and bulbs is composed of nine (9) commodities, i.e. galangal; greater galangal; lesser galangal; horseradish root; onions, shallots, dried garlic, dried ginger and turmeric. CCSCH has already elaborated the standards for dried garlic and dried ginger respectively, while turmeric is under consideration. To expedite the work of CCSCH, the group standard will cover the remaining six (6) commodities which include galangal; greater galangal; lesser galangal; horseradish root; onions and shallots.

g. Work already undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental bodies.

There is no general group standard that embraces all the six commodities; however individual standards specifications that can be taken into account when developing the standard include those developed by organisations such as ISO, ESA and ASTA.

5. RELEVANCE TO CODEX STRATEGIC OBJECTIVES

This grouping approach aligns with the Codex 2020-2025 strategic goals (Goal 1 – “Codex will need to be proactive and flexible and to respond in a timely manner to the opportunities and challenges that result”), and will address critical issues in a timely manner. The development of the standards will be based on science and risk-analysis principles. Categorizing the spices based on the plant part used will not only make the standard functional, efficient, and user-friendly, but organizing these various spices in a single location will increase the impact and will make the standard more recognizable across the globe.

6. INFORMATION ON THE RELATION BETWEEN THE PROPOSAL AND OTHER EXISTING CODEX DOCUMENTS AS WELL AS OTHER ONGOING WORK

The proposed group standard will follow the format like that of the *General Standard for Fruit Juices and Nectars* (CXS 247-2005), with a General Requirements section with text common to all products in the group and an annex with specific Chemical and Physical characteristics for each product.

There is no other ongoing work about the six identified spices, and this standard will include references to relevant pre - existing Codex texts developed by general subject committees, as follows:

(a) *General Principles of Food Hygiene* (CXC 1-1969)

(b) *Code of Hygienic Practice for Low Moisture Foods* (CXC 75-2015) (Annex III)

(c) *Principles and guidelines for the Establishment and Application of Microbiological Criteria related to Foods* (CXG 21-1997)

(d) Maximum limits for pesticide residues adopted by Codex.

(e) *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995)

(f) *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985)

(g) *Recommended Methods of Analysis and Sampling* (CXS 234-1999)

7. IDENTIFICATION OF REQUIREMENT FOR AVAILABILITY OF EXPERT SCIENTIFIC ADVICE

There is none identified now, but should it be required during the development of this standard, such request will be referred to the relevant joint FAO/WHO scientific advice programs (JECFA, JEMRA, etc.) as appropriate.

8. IDENTIFICATION OF NEED FOR TECHNICAL INPUT TO THE STANDARD FROM EXTERNAL BODIES

Due to the high level of participation by public and private sector spice and culinary experts in national and observer organizations represented at CCSCH, there is no need for technical input from external bodies.

9. PROPOSED TIMELINE FOR COMPLETION OF NEW WORK

It is expected that the development of the group standard for Rhizomes, Roots and Bulbs would be conducted in three CCSCH sessions or less, depending on the agreement reached by the Committee.

Appendix II

PROPOSED DRAFT STANDARD FOR DRIED ROOTS, RHIZOMES, AND BULBS –GALANGAL; GREATER GALANGAL; LESSER GALANGAL; HORSERADISH ROOT; ONIONS AND SHALLOTS

1. SCOPE

This Standard applies to all those plants commonly sold in commerce as defined in Section 2.1 below, and offered for direct human consumption, commercial food processing, and for repacking if required. The exact species bought/sold may be defined by contractual specifications. This standard does not apply to these products when intended for industrial processing.

2. DESCRIPTION

2.1 Product Definition

2.1.1 Dried roots, rhizomes, and bulbs belonging to the varieties listed in Table 1:

Table 1: Varieties of dried roots, rhizomes, and bulbs covered by this standard

	Common Name	**Trade Name/s**	**Scientific name**
1	Galangal	Galanga, Black galangal, Sand ginger	*Kaempferia galanga* L.
2	Greater galangal	Greater galangal	*Alpinia galanga* Wild.
3	Lesser galangal	Lesser galangal	*Alpinia officinarum* Hance
4	Horseradish root	Horseradish root	*Armoracia rusticana* G.Gaertn., B.Mey. & Scherb.
5	Onion	Onion	*Allium cepa* L. *Allium cepa Aggregatum* Group
6	Shallot	Shallot	*Allium ascalonicum* L.

2.2. Styles

Dried roots, rhizomes, and bulbs may be:

- Whole;
- pieces;
- ground/powdered. Size of each form would be determined by contractual agreement between buyer and seller; or
- Other styles distinctly different for those three are allowed, provided they are labeled accordingly.

2.3 Sizing (optional)

Whole and pieces of roots, rhizomes and bulbs may be sized by count per weight, weight, diameter, or in accordance with pre-existing trade practice. When sized, the methods used should be labelled on the package.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Basic Ingredients

Roots, rhizomes, and bulbs as described in Section 2. Product Description

3.1.2 Composition for use of General and Specific Names

The common name may be used if the product is a blend of the different species listed under the trade names/scientific names for that common name. When a trade name is used for a product, the product must contain a minimum of 80% of the species listed for the trade name.

3.2 Quality Criteria

3.2.1 General

Dried roots, rhizomes and bulbs shall be safe and suitable for human consumption and free from live insects and practically free from dead insects, insect fragments, and rodent contamination visible to the naked eye

(corrected, if necessary, for abnormal vision).

3.2.2 Odour, flavour, and color

Roots, rhizomes, and bulbs shall be free from any foreign odour or flavour, especially from mustiness. They shall have the characteristic odour and flavour of the roots, rhizomes and bulbs considering the geo-climatic factors/conditions, varieties and the main chemical components of the volatile oil indicated in Annex I, Table 1 – Chemical Characteristics.

3.2.3. Classification (optional)

In accordance with the Chemical and Physical Characteristics in Section 3.2.4, where appropriate, whole, pieces, or ground/powdered roots, rhizomes, and bulbs may be classified into the following grades: Class I & Class II. When roots, rhizomes and bulbs are traded as classified/graded, the chemical and physical requirements in Annexes I and II apply as the minimum requirements for the lowest class/grade.

3.2.4 Chemical and physical characteristics

Roots, rhizomes, and bulbs shall comply with the chemical and physical properties in Annex I, Table 1- Chemical Characteristics and Annex I Table 2- Physical Characteristics. The defects allowed must not affect the general appearance of the product as regards to its quality, keeping quality and presentation in the package.

4 FOOD ADDITIVES

“Anticaking agents may be used in the powdered form of the products in accordance with Table 3 of the General *Standards for Food Additives* (CXS 192-1995).”

5 CONTAMINANTS

5.1 The products covered by this Standard shall comply with the maximum levels of the *General Standard* for *Contaminants and Toxins in Food and Feed* (CXS 193-1995) and *Code of Practice for Weed Control to Prevent and Reduce Pyrrolizidine Alkaloid Contamination in Food and Feed* (CXC 74-2014) and other relevant Codex texts.

5.2 The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

6 FOOD HYGIENE

6.1 It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969), the *Code of Hygienic Practice for Spices and Dried Aromatic Herbs* (CXC 42-1995) and other relevant Codex texts.

6.2 The products should comply with any microbiological criteria established in accordance with the *Principles for the Establishment and Application of Microbiological Criteria for Foods* (CXG 21-1997).

7 WEIGHTS AND MEASURES

Containers shall be as full as practicable without impairment of quality and shall be consistent with a proper declaration of contents for the product.

8 LABELLING and PACKAGING

8.1 The products covered by the provisions of this Standard shall be labelled in accordance with the *General* Standard *for the Labelling of Pre-packaged Foods* (CXS 1-1985).

In addition, the following specific provisions apply:

8.2 Name of the Product

8.2.1 The name of the product shall be dried roots, rhizomes, and bulbs or roots, rhizomes, and bulbs as described in Section 2.1 if the omission of the word “dried” would not mislead or confuse the consumer.

8.2.2 The name of the product may include an indication of the style as described in Table 1 and Section 2.2 (styles). The scientific name of the product is optional.

8.2.3 Trade name, variety, or cultivar may be listed on the label.

8.3 Country of origin and country of harvest

8.3.1 Country of origin shall be declared.

8.3.2 Country of harvest (optional)

8.3.3 Region of harvest and year of harvest (optional)

8.4 Commercial identification

- Class/Grade, if applicable
- Particle Size (optional)

8.5 Labelling of Non-Retail Containers

The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).

9 METHODS OF ANALYSIS AND SAMPLING

9.1 Methods of Analysis

Provision	Method	Principle
Moisture	AOAC 2001.12 ASTA 2.0	Distillation
Total Ash	AOAC 950.49 ASTA 3.0	Gravimetry
Acid Insoluble Ash	ISO 930:1997 Alternative: ASTA 4.0	Gravimetry
Volatile Oil	AOAC 962.17 ASTA 5.0	Distillation
Extraneous Matter	ISO 927:2009 Alternative: ASTA 14.1	Visual Examination
Foreign Matter	ISO 927:2009	Visual Examination
Insect Damage	Method V-8 Spices, Condiments, Flavors and Crude Drugs (Microanalytical Procedure Manual, FDA Technical Bulletin Number 5)	Visual Examination
Insects/Excreta/Insect Fragments	Method appropriate for a particular spice from AOAC Chapter 16, subchapter 14	Visual Examination

After the final adoption of the standard by the Commission, the identified methods will be transferred to the standard for *Recommended Methods of Analysis and Sampling* (CXS 234-1999) and the text in the Procedural Manual will be inserted.

Sampling Plan: To Be Developed

Annex I:

Table 1 - Chemical Characteristics for Spices Derived from Roots, Rhizomes, and Bulbs

Name	Form/Style	Moisture content %w/w (max)	Bulk Density	Total Ash % w/w (max)	Acid insoluble Ash % w/w max	Volatile Oils ml/100g (Min)	Markers Volatile Oil	Non-Volatile Ether Extract %W/W	Crude Fiber % By Mass
	Whole	14							
	Pieces/Cut Cracked/Broken	14							
Galangal	Ground/Powdered	10		9	4				
	Whole	14	2.2	4	4				
	Pieces/Cut Cracked/Broken	14			4				
Greater Galangal	Ground/Powdered	10		4	4				
	Whole	14	2		4				
	Pieces/Cut Cracked/Broken	14			4				
Lesser Galangal	Ground/Powdered	10		9	4				
	Whole								
	Pieces/Cut Cracked/Broken								
Horseradish Root	Ground/Powdered								
	Whole	8		5	0.5				30
	Pieces/Cut Cracked/Broken	6		5	0.5				
Onion	Ground/Powdered	6		5	0.5				
	Whole	8							
	Pieces/Cut Cracked/Broken	6		5	0.5				
Shallot	Ground/Powdered	6		5	0.5				

Annex I:

Table 2. - Physical Characteristics for Spices Derived from Roots, Rhizomes, and Bulbs

Name	**Form/Style**	**Extraneous Matter %W/W (**max**)**	**Foreign Matter %W/W (**max**)**	**Broken (**among whole style only**)**	**Mould Damage %W/W (**max**)**	**Dead Whole Insects[2] Count/100g (**max)	**Insect Damage %W/W (**max**)** Whole only	**Insect Fragments count/10g** (max) (Ground only)	**Live Insects**	**Excreta Mammalian [1]** Mg/Kg Max	**Excreta Other** mg/kg (max**)**	**Rodent Filth Count/25 g**	**Off Size (**When sized**)**	**Other**
Galangal	Whole				3									
	Pieces/Cut Cracked/Broken													
	Ground/Powdered	1												
Greater Galangal	Whole				3									
	Pieces/Cut Cracked/Broken													
	Ground/Powdered	1												
Lesser Galangal	Whole				3									
	Pieces/Cut Cracked/Broken													
	Ground/Powdered	1												
Horse radish Root	Whole													
	Pieces/Cut Cracked/Broken													
	Ground/Powdered													
Onion	Whole	5												
	Pieces/Cut Cracked/Broken	2												
	Ground/Powdered													
Shallot	Whole													
	Pieces/Cut Cracked/Broken	2												
	Ground/Powdered													

Notes:
1: Mammalian Excreta- If the average of the total number of sub-samples exceeds the listed milligram per kg and/or lb.
2: Whole Dead Insects- If the total number of whole dead insects found in the total number of the sub samples exceeds the specified value shown in the table