
Kocho – Specification

Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Fruits and vegetables (TC 13) and published by the Ethiopian Standards Agency (ESA).

The standard has been developed to address observed needs and to support the local industry in order to make progress through uprisings in competitiveness and maintain comparative market advantage both domestically and internationally.

Information has been gathered from various relevant resources in developing it.

CODEX STAN. 192, General standard for food additives

EPHI Data, Composition of Foods Commonly used in Ethiopia.

Acknowledgement is made for the use of information from the above publication.

Kocho — Specification

1. Scope

This Ethiopian Standard specifies the requirements for kocho which is obtained from the processing of Enset (*Ensete ventricosum*) and shall be subjected to further processing before consumption.

2. Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CES 73, General standard for prepackaged foods - Labeling.

ES 577, Recommended code of practice - General principle of food hygiene.

ES ISO 712, Cereals and cereal products - Determination of moisture content - Reference method

ES ISO 874, Fresh fruits and vegetables - Sampling.

ES 929, Code of practice for hygiene in the food and drink manufacturing industry

ES ISO 2171, Cereals, pulses and by-products - Determination of ash yield by incineration

ES ISO 4833-1, Microbiology of the food chain - Horizontal method for the enumeration of microorganisms - Part 1: Colony count at 30 °C by the pour plate technique.

ES ISO 5498, Agricultural food products - Determination of crude fiber content - General method

ES ISO 6492, Animal feeding stuffs – Determination of fat content

ES ISO 6579-2, Microbiology of food and animal feed - Horizontal method for the detection, enumeration and serotyping of Salmonella - Part 2: Enumeration by a miniaturized most probable number technique

ES ISO 6633, Fruits, vegetables and derived products - Determination of lead content - Flameless atomic absorption spectrometric method.

ES ISO 6888-1, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase staphylococci (*Staphylococcus aureus* and other species) - Part 1: Technique using Baird-Parker agar medium.

ES ISO 6888-2, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase-p-staphylococci (*Staphylococcus aureus* and other species) - Part 2: Technique using rabbit plasma fibrinogen agar medium.

ES ISO 7251, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive Escherichia coli - Most probable number technique

ES ISO 10520, Native starch - Determination of starch content - Ewers polarimetric method

ES ISO 11212-4, Starch and derived products- Determination of Cadmium content by atomic absorption spectrometry with electrothermal atomization

ES ISO16050, Food stuffs - Determination of aflatoxin B1 and total content of aflatoxin B1, B2, G1 and G2 in cereals, nuts, and derived products - High performance liquid chromatographic method.

ES ISO 17239, Fruits, vegetables and derived products - Determination of arsenic content - Method using hydride generation atomic absorption spectrometry.

ES ISO 20483, Cereals and pulses - Determination of the nitrogen content and calculation of the crude protein content – Kjeldah method.

ES ISO 21527-1, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts and

ES 6922:2022

moulds - Part 1: Colony count technique in products with water activity greater than 0.95.

ES ISO 21527-2, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts and moulds - Part 2: Colony count technique in products with water activity less than or equal to 0.95.

ES ISO 22002-1, Prerequisite programmes on food safety - Part 1 Food manufacturing.

ES ISO 27085, Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum, arsenic, lead and cadmium by ICP-AES.

3. Terms and definitions

For the purpose of this standard, the following terms and definitions shall apply.

3.1.

kocho

is a starchy food obtained from fermenting edible part of the leaf sheath and corm of enset plant (*Ensete ventricosum*)

3.2.

food grade material

one that will not transfer non-food chemicals into the food and contains no chemicals which would be hazardous to human health.

3.3.

foreign matter

all organic and inorganic materials (such as sand, soil, glass).

3.4.

practically free

product without defects in excess of those that can be expected to result from, and be consistent with good cultural and handling practices employed in the production and marketing of kocho.

4. Product description

is the dough like material which is the bulk of the fermented starch obtained from the mixture of the decorticated leaf sheaths and pulverized corm of the enset plant (*Ensete ventricosum*). The fermented kocho is often stored in pits that are lined with Enset leaves. The kocho can be left in a storage pit for a month, but it can be stored for many months and even for several years. The quality of the product can be affected by several factors, mainly by the duration of fermentation, the cultivars/varieties of the Enset and methods of processes. Kocho can be used for making different edible products like Kocho bread, bursame/hatakana, biscuits and others.

5. Essential composition and quality factors

5.1. Raw material

Kocho shall be produced from selected Enset which is fresh, matured, free from insects' damage and mould spoilage.

5.2. General quality factors

Kocho shall be;

5.2.1. Practically free from filth in amounts that may represent a hazard to human health.

5.2.2. Free from abnormal color, flavors, odours.

5.2.3. Practically free from any foreign matter.

Kocho shall conform to the compositional requirements listed under Table 1 below.

Table 1 Compositional requirements for kocho

Characteristics on dry basis	Requirement	Method of test
Crude ash content, % by mass, Max.	4	ES ISO 2171
Crude protein content (N x 6.25), % by mass, Min.	1	ES ISO 20483
Crude fat content, % by mass, Max.	2	ES ISO 6492
Moisture content, % by mass, Max.	50	ES ISO 712
Crude fiber content, % by mass, Max.	4	ES ISO 5498
Carbohydrate without fiber, (%), Min.	90	ES ISO 10520
Calcium (Ca) mg/100g, Min	60	ES ISO 27085
Potassium (K), mg/100g, Min	275	
Iron (Fe), mg/100g, Min	4	

6. Contaminants

6.1. Pesticide residues

Kocho shall comply with those maximum residue limits established by the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

6.2. Heavy metals

Kocho shall be free from heavy metals in amounts which may present a hazard to health. If present, they shall not exceed the limits specified in Table 2 below.

Table 2 Heavy metals

Type of impurity	Limit (mg/kg, Max.)	Test method
Arsenic (As)	0.1	ES ISO 17239
Lead (Pb)	0.1	ES ISO 6633
Cadmium (Cd)	0.1	ES ISO 11212-4

6.3. Mycotoxins

Kocho shall comply with those maximum mycotoxin limits established by the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193). In particular total aflatoxins in kocho shall not exceed 10 µg/kg and 5µg/kg for aflatoxin B1 when tested in accordance with ES ISO 16050.

7. Hygiene

7.1. Kocho shall be manufactured and handled in a hygienic manner in accordance with ES 577, ES 929 and ES ISO 22002-1.

7.2. The product shall be free from pathogenic micro - organisms and shall comply with microbiological limits in Table 3 below.

Table 3 Microbiological limits for kocho

Microorganisms	limit	Method of test
Total plate count, cfu/g, Max	10 ⁵	ES ISO 4833-1
Yeast and mould, CFU/g, Max.	10 ⁴	ES ISO 21527-1 ES ISO 21527-2
<i>Staphylococcus aureus</i> cfu/g, Max	Absent	ES ISO 6888-1 ES ISO 6888-2
<i>Escherichia.Coli</i> , per g	Absent	ES ISO 7251
<i>Salmonella</i> in 25g	Absent	ES ISO 6579-2

8. Packaging and Labelling

8.1. Packaging

Kocho shall be packaged in food grade materials that will safeguard the hygienic, physical nutritional and organoleptic qualities of the product.

8.2. Labelling

The labelling shall comply with the requirements of CES 73 and shall be legibly and indelibly marked with the following:

- a) Name of the product -“ (kocho)”;
- b) Name and physical and postal address of manufacturer;
- c) List of ingredients;
- d) Net weight;
- e) Storage condition; and
- f) Country of origin.

9. Sampling Method

Sampling of Kocho shall be done in accordance with ES ISO 874.

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes. Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed from our website.

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International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the International Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for standardization (ARSO).

More Information?

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