KENYA STANDARD **DKS 2849**

Moringa leaf products — Code of practice

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TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Ministry of Health
Agriculture and Food Authority (AFA) — Nuts and Oil Crops Directorate
Kenya Industrial Research and Development Institute
Government Chemist's Department
Jomo Kenyatta University of Agriculture and Technology — Department of Food Science and Technology
Healthy-U Ltd.
Gold Crown Beverages
Consumer Information Network
Pharmacy and Poisons Board
Kili Naturals
Melvin Marsh Internationals
Moringa for Life — EPZ Ltd.
Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

KENYA STANDARD

DKS 2849
ICS 67.220.10

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Foreword

This Kenya Standard was developed by the Technical Committee on Herbal Drinks under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

This Kenyan Standard is a national code of practice for the production of Moringa oleifera leaf products. The standard outlines the recommended codes of practice for the Moringa leaf products Industry.

During the preparation of this standard, reference was made to the following documents:

GS 999: 2009, Ghanaian standard for Medicinal Plants- Code of practice for the production of *Moringa* leaf products.

South African Standard SANS 1683:2015- Moringa

Kenya Good Agricultural Practices

Occupational Safety and Health (OSH) Act of 1970

WHO guidelines for assessing quality of herbal medicines.

Food, Drugs and Chemical Substance Act, CAP 254 of the laws of Kenya.

Acknowledgement is hereby made for the assistance derived from these sources.

Moringa leaf products — Code of Practice

1 Scope

This Kenya Standard provides guidance for production and hygienic processing of quality and safe moringa (*Moringa oleifera)* leaf products.

This standard applies to moringa leaf products which are dehydrated either by natural drying and/or artificial drying.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

KS EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

KS 137, *Methods for sampling food and animal feedstuffs*

KS 2235, *Handling of herbal medicines — Code of hygiene*

SANS 1683, *Moringa*

Methods of test for the soil

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
traceability
the ability to trace and track history, use or location of moringa leaf product by means of recorded identification

3.2
dehydration
is the removal of moisture by natural and/or artificial means.

3.3
milling
grinding of dry moringa leaf or leaves excluding the main stalk

3.4
sampling
collective sample taken randomly from a lot during a conformity check and inspection

4 Requirements

Moringa leaf products shall be processed from moringa leaves harvested from moringa plants that meet the following requirements.

4.1 Cultivation

Cultivation of the moringa plant shall be in accordance with the requirements of the Good Agricultural

Practices (GAP) for Kenya.

4.1.1 Site selection

The moringa farm shall not be sited in areas where heavy metals are likely to be present and in areas with toxic soils such as near garages, refuse dumps and mining areas.

The moringa plants shall be cultivated on soil that meets the requirements for heavy metals given in Table 1.

Table 1 — Requirements for soil for moringa plants

S/N	Heavy metal	Limit (mg/kg)
i)	Chromium (Cr)	200
ii)	Lead (Pb)	200

NOTE The above list is not exhaustive, additional heavy metals can be tested for enhanced quality assurance.

4.1.2 Planting material

The Moringa plants shall be cultivated using healthy seeds, cuttings and/or seedlings.

4.1.3 Agrochemicals

In the cultivation of moringa, synthetic agrochemical shall be avoided. Only natural or equivalent methods of soil enrichment are recommended, such methods include manuring, composting etc. The manure applied shall be devoid of human faeces and be thoroughly composted prior to application.

Natural pest control methods and/or bio-pesticides are recommended for use as needed. If synthetic pesticides are suspected to have been used, soil and plant analyses shall be conducted.

4.2 Harvesting and transportation of moringa leaves

4.2.1 Harvesting

Moringa leaves shall be harvested fresh. Dry, wrinkled, yellowing and/or pest damaged leaves shall not be included.

Moringa leaves shall not be placed directly on the ground after harvesting.

4.2.2 Transportation

4.2.2.1 Freshly harvested moringa leaves shall be transported loosely in clean and well-ventilated containers that do not allow for change in the quality and composition of the harvested leaves.

Appropriate transportation is done during the cooler hours of the day to prevent exposure to direct sunlight and heat degradation.

4.2.2.2 Dried moringa leaves shall be transported in clean and dry containers that do not affect the quality and composition of the leaves.

4.3 Preparation and processing of moringa leaves

4.3.1 Hygiene

Moringa leaf products shall be prepared and handled in hygienic conditions in accordance with KS EAS 39 and the Public Health Act.

To ensure the safety of moringa, it is necessary that employees handling the moringa are medically

examined and certified as fit to work in a food processing plant.

The staff shall be adequately trained in hygiene and hygiene practices.

4.3.2 Cleaning of moringa leaves

Freshly harvested moringa leaves may be pre-treated by soaking for 3 min in 1% saline solution or other food grade sanitizing solution. The pre-treated leaves shall be allowed to drip dry and then transferred to the drying area.

4.3.3 Drying of moringa leaves

In drying, the leaves shall be protected from direct sunlight since drying in the sun will leach out the essential nutrients. Moringa leaves shall be evenly spread out to dry on clean net/mesh trays in the shade or in a drying chamber.

Moisture content after drying should not exceed 10%.

NOTE Too high a temperature is known to negatively affect the quality of moringa. For artificial drying, it is recommended that moringa leaves be dried between 50 ºC - 52 ºC until the recommended moisture content of 10% or below is achieved.

4.3.4 Milling of moringa leaves

Dried moringa leaves shall be milled into powder using an appropriate equipment such as stainless steel hammer mill installed in a clean and enclosed environment with appropriate dust containment measures. Coarse particles may be separated using a mechanical sieving machine fitted with stainless steel mesh and re-milled. Mesh size shall be between 0.2 mm and 1.5 mm.

4.4 Handling and storage of processed moringa leaves

4.4.1 Handling

All persons handling and processing moringa leaves for production shall comply with personal hygiene requirements stated in 4.3.1.

4.4.2 Storage

The dried moringa leaf powder is packed into clean, single-use bags and sealed. This is enclosed in a secondary packaging and sealed to maintain freshness and dryness prior to use at the production floor.

4.5 Processing and packaging of moringa leaf products

4.5.1 Personal hygiene

All persons involved in processing and packaging of moringa leaf products shall comply with personal hygiene requirements stated in 4.3.1.

4.5.2 Personnel

i) Local experts responsible for the field collection shall have formal or informal practical education and training in plant sciences and have practical experience in fieldwork.

ii) They shall be responsible for training any collectors who lack sufficient technical knowledge to perform the various tasks involved in the plant collection process.

iii) They are also responsible for the supervision of workers and the full documentation of the work performed.

iv) Field personnel shall have adequate botanical training, and be able to identify *moringa oleifera*.

v) Local experts shall serve as knowledgeable links between non-local people and local communities and collectors. All collectors and local workers involved in the collection operation shall have sufficient knowledge of the species targeted for collection and be able to distinguish target species from botanically related and/or morphologically similar species. Collectors shall also receive instructions on all issues relevant to the protection of the environment and the conservation of plant species, as well as the social benefits of sustainable collection of *moringa oleifera*.

vi) The collection team shall take measures to ensure the welfare and safety of staff and local communities during all stages of *moringa oleifera* leaf sourcing and trade. Appropriate protective clothing, including gloves, shall be worn when necessary.

4.5.3 Production

All persons involved in processing and packaging of moringa leaf products shall ensure that they adhere to good manufacturing practices, safety procedures, Occupational Safety and Health Act (OSHA) and follow production protocols at all times.

4.5.4 Additives and preservatives

In the processing of moringa leaf products, additives and artificial preservatives shall not be used.

4.5.5 Processing conditions

Moringa leaf products shall be processed under controlled temperatures. The processing temperature and humidity shall be well monitored and recorded.

5 Packaging

Moringa leaf products shall be packaged in clean, dry and opaque containers made of materials which do not affect the quality of the product. The packaging shall be done in such a manner as to allow the moringa leaf powder to retain its freshness over the shelf life period. Each unit package shall be properly sealed to prevent the leakage of the contents and the absorption of moisture.

NOTE Food or pharmaceutical grade material is used, and information is available from packaging material suppliers.

6 Labelling

Labelling of moringa shall be done in accordance with the requirements on labelling KS EAS 38. The moringa leaf products shall be tested regularly to ensure values presented conform with the product specification on the label.

7 Sampling

Sampling for moringa shall be done in accordance with KS 137.

