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Traditional Chinese medicine — *Curcuma longa* rhizome

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee 249, *Traditional Chinese medicine*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The medicinal history of *Curcuma longa* rhizome dates back 4 000 years. *Curcuma longa* rhizome has been used as a traditional herbal medicine in China, India, Indonesia, Japan, Malaysia, South Korea, Thailand, and other countries. It has been used for the treatment of digestive, respiratory and circulatory diseases, as well as skin diseases.

The establishment of an international standard for *Curcuma longa* rhizome is necessary to guarantee the clinical effectiveness, safety and controllability in global commerce and trade.

As national implementation may differ, national standards bodies are invited to modify the values given in [5.6](#), [5.7](#), [5.8](#), [5.9](#), [5.10](#) and [5.11](#) in their national standards. Examples of national and regional values are given in [Annex C](#). In addition, examples for traditional grading of *Curcuma longa* rhizome are given in [Annex D](#).

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Traditional Chinese medicine — *Curcuma longa* rhizome

1 Scope

This document specifies the quality and safety requirements for *Curcuma longa* rhizome.

This document applies to the production and sale of cultivated *Curcuma longa* rhizome that is sold and used as natural medicine in international trade, including Chinese materia medica (whole medicinal materials) and decoction pieces derived from this rhizome.

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.

ISO 18664, *Traditional Chinese Medicine — Determination of heavy metals in herbal medicines used in Traditional Chinese Medicine*

ISO/TS 21310, *Traditional Chinese medicine — Microscopic examination of medicinal herbs*

ISO 21371, *Traditional Chinese medicine — Labelling requirements of products intended for oral or topical use*

ISO 22217, *Traditional Chinese medicine — Storage requirements for raw materials and decoction pieces*

ISO 22258, *Traditional Chinese medicine — Determination of pesticide residues in natural products by gas chromatography*

ISO 22283, *Traditional Chinese medicine — Determination of aflatoxins in natural products by LC-FLD*

ISO 22590, *Traditional Chinese medicine — Determination of sulfur dioxide in natural products by titration*

ISO 23723, *Traditional Chinese medicine — General requirements for herbal raw material and materia medica*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

***Curcuma longa* rhizome**

dried rhizome of *Curcuma longa* L. (Fam, Zingiberaceae) after *primary processing* (3.2)

Note 1 to entry: *Curcuma longa* rhizome is harvested when the aerial parts of the plant are withered, e.g. from December to the next February in China.

3.2

primary processing

stage of the pre-treatment of natural materials during the collecting and harvesting process by which the raw materials are transformed into medicinal materials

Note 1 to entry: The primary processing of *Curcuma longa* rhizome includes removing the fibrous roots, washing, boiling or steaming to the core, and drying in the sun or dry at the temperature below 55 °C.

[SOURCE: ISO 21300:2019, 3.4, modified — Note 1 to entry has been added.]

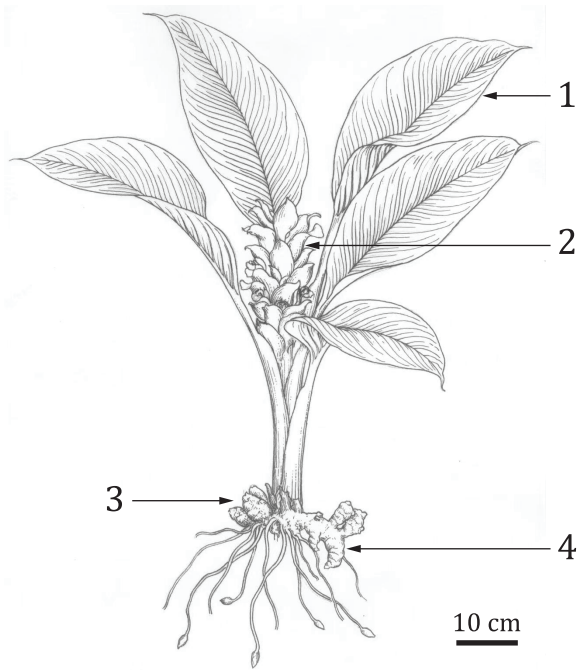
4 Descriptions

[Figure 1](#) illustrates the structure of *Curcuma longa* L.

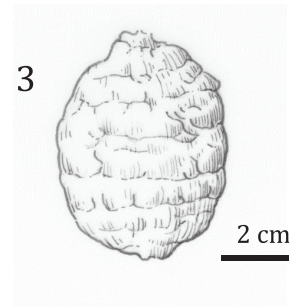
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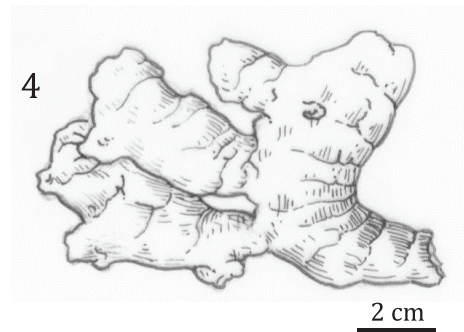
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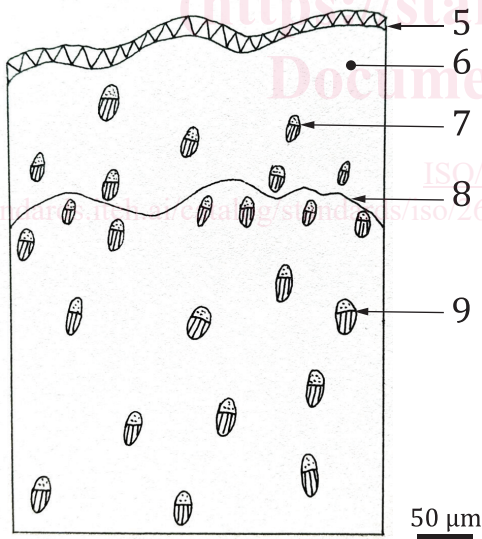
a) Plant of *Curcuma longa* L.



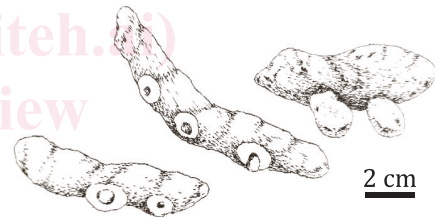
b) Main rhizome of *Curcuma longa* L.



c) Lateral rhizome of *Curcuma longa* L.



f) Sketch of transverse section of *Curcuma longa* L.



d) Rhizome of *Curcuma longa* L. (dried and unsliced)



e) Rhizome of *Curcuma longa* L. (decoc-tion pieces)

Key

- 1 *Curcuma longa* leaf
- 2 *Curcuma longa* inflorescence
- 3 curcuma main rhizome
- 4 curcuma lateral rhizome
- 5 cork
- 6 cortex

- 7 leave-trace vascular bundle
- 8 endodermis
- 9 vascular bundle

Figure 1 — Structure of *Curcuma longa* L.

5 Quality and safety requirements and recommendations

5.1 General characteristics

The following requirements shall be met before sampling:

- a) The sample shall be clean and free from rootlets;
- b) The presence of living insects, mouldy root and rhizome, and external contaminants which are visible to the naked eye shall not be permitted.

5.2 Macroscopic features

5.2.1 The rhizomes are irregular ovoid, cylindrical or spindle-shaped, often curved, some with short forked branches. The outer surface is rough, with crinkled texture and distinct links, with rounded branch marks and fibrous root marks. The surface colour is deep yellow to yellowish brown.

5.2.2 The odour is fragrant. The taste is bitter and pungent.

5.2.3 The section feature is brown yellow to golden yellow, with horny appearance and wax-like lustre. The section colour is golden yellow to tan.

5.3 Microscopic feature

Examine the transverse section under a microscope. Epidermal cells are flattened and thin-walled. The cork is composed of several layers of cells, flattened and thin-walled, regularly arranged. A few leaf-trace vascular bundles are scattered across the cortex. The endodermis is distinct. The stele is broad; collateral vascular bundles are mostly scattered near the pericycle, gradually decreased inwards. See [Figure 1](#) F.

5.4 Thin-layer chromatography (TLC) features

The identification of extract by thin-layer chromatography (TLC) shall present the spots or bands with the same colour and position corresponding to those of reference solutions.

5.5 Marker compounds

The mass fractions of marker compounds, such as bisdemethoxycurcumin, curcumin and demethoxycurcumin, should be determined.

5.6 Essential oil

The mass fraction of essential oil should not be less than 4,0 %.

5.7 Ethanol-soluble extractive

The mass fraction of ethanol-soluble extractive should not be less than 6,0 %.