



**International  
Standard**

**ISO 19851**

**Traditional Chinese medicine —  
*Cinnamomum cassia* branch**

*Médecine traditionnelle chinoise — Branche de Cinnamomum cassia*

**First edition  
2025-02**

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Published in Switzerland

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## Foreword

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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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 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](http://www.iso.org/members.html).

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## Introduction

*Cinnamomum cassia* branch, the dried young branch of *Cinnamomum cassia* Presl (Lauraceae), has been used as a medicinal herb worldwide for a long time. According to traditional Chinese medicine (TCM) theory, it has various therapeutic effects, including dissipating cold and releasing the exterior, warming and unblocking meridians, assisting yang and transforming into qi. Clinically, *Cinnamomum cassia* branch is used to treat wind-cold common cold, cold-induced stomach duct and abdominal pain, arthralgia, phlegm-fluid retention, oedema, palpitations, running piglet, etc.

There is a large market demand for *Cinnamomum cassia* branch due to its frequent use in clinical prescriptions and compound preparations of TCM. However, cinnamaldehyde, one of the active ingredients of *Cinnamomum cassia* branch, becomes unstable when stored improperly and can lead to reduced efficacy. Moreover, the international trade of *Cinnamomum cassia* branch faces challenges due to varying in quality standards across different countries or regions.

To ensure the quality and enhance the market value of *Cinnamomum cassia* branch, the establishment of an International Standard is crucial. This document can help guarantee quality and clinical effectiveness, promote standardization and modernization, and regulate production, trade and usage. This document includes the following requirements for *Cinnamomum cassia* branch: macroscopic morphological observation, microscopic characteristics of transverse section and powder, phytochemical indexes, and standardized physical and chemical tests (moisture, total ash, and ethanol-extractives content). Volatile oils are the main active ingredient in Lauraceae plants. Among them, cinnamaldehyde, which has specific pharmacological activities such as anti-inflammation, anti-oxidation and anti-myocardial ischemia, is closely related to the biological activity of *Cinnamomum cassia* branch. In this document, a thin-layer chromatography (TLC) identification method using *Cinnamomum cassia* branch reference as a marker is established. Additionally, a high-performance liquid chromatography (HPLC) analysis method of *Cinnamomum cassia* branch using cinnamaldehyde as a marker is also developed.

As national implementation can differ, national standards bodies are invited to modify the values given in [5.5](#) and [5.6](#) in their national standards. An example of national values is given in [Annex D](#).

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# Traditional Chinese medicine — *Cinnamomum cassia* branch

## 1 Scope

This document specifies the quality and safety requirements for *Cinnamomum cassia* branch derived from *Cinnamomum cassia* Presl.

This document is applicable to *Cinnamomum cassia* branch that is sold as natural medicines in international trade including Chinese materia medica (whole medicinal materials) and decoction pieces derived from *Cinnamomum cassia* Presl.

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

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

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

#### ***Cinnamomum cassia* branch**

dried young branch of *Cinnamomum cassia* Presl. (Fam. Lauraceae)

### 3.2

#### **marker compound**

chemical constituent within a medicinal herb that can be used to verify its quality

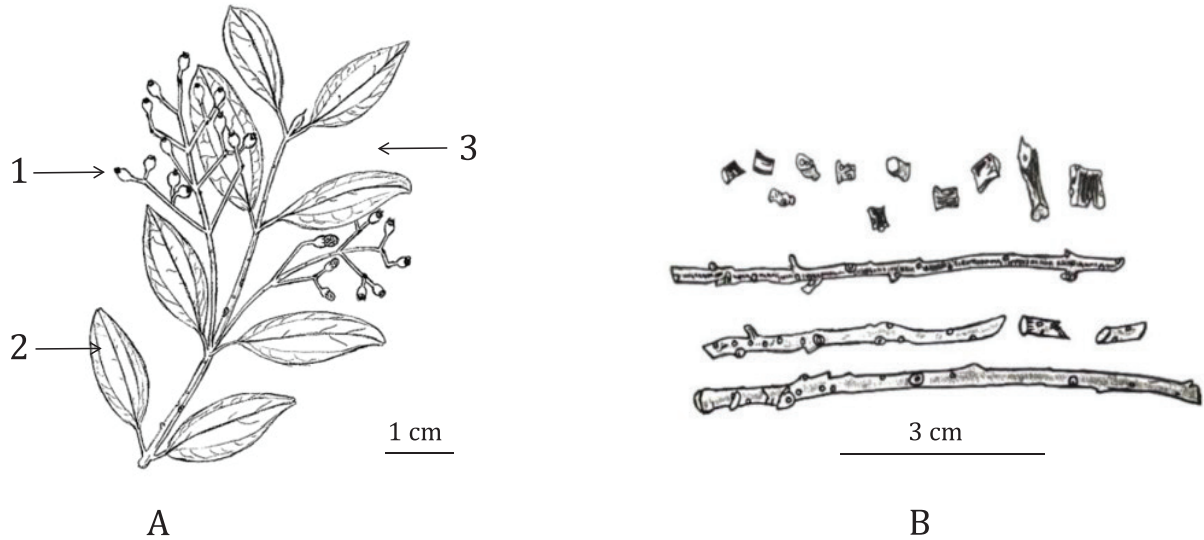
Note 1 to entry: Usually described as active ingredients or chemicals that confirm the correct botanical identity of the starting material.

Note 2 to entry: There may be one or more marker compounds for a medicinal herb.

[SOURCE: ISO 22585:2022, 3.2]

## 4 Descriptions

*Cinnamomum cassia* branch is the dried young branch of *Cinnamomum cassia* Presl, as shown in [Figure 1](#). The young branch is collected in spring and summer, with the leaves removed, and then dried in the sun, or dried in the sun after sliced. As *Cinnamomum burmanni* branch is a similar species of *Cinnamomum cassia* branch, a method for differentiating these two species is given in [Annex C](#).



### Key

- A *Cinnamomum cassia* Presl.
- B dried young branch
- 1 fruit
- 2 leaf
- 3 branch

**Figure 1 — Structure of *Cinnamomum cassia* Presl. (Lauraceae)**

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## 5 Quality and safety requirements and recommendations

### 5.1 General requirements

The following requirements shall be met before sampling.

- a) *Cinnamomum cassia* branch shall be clean and free from leaves and foreign matter.
- b) The presence of living insects, mouldy branch and external contaminants which are visible to the naked eye shall not be permitted.

### 5.2 Morphological features

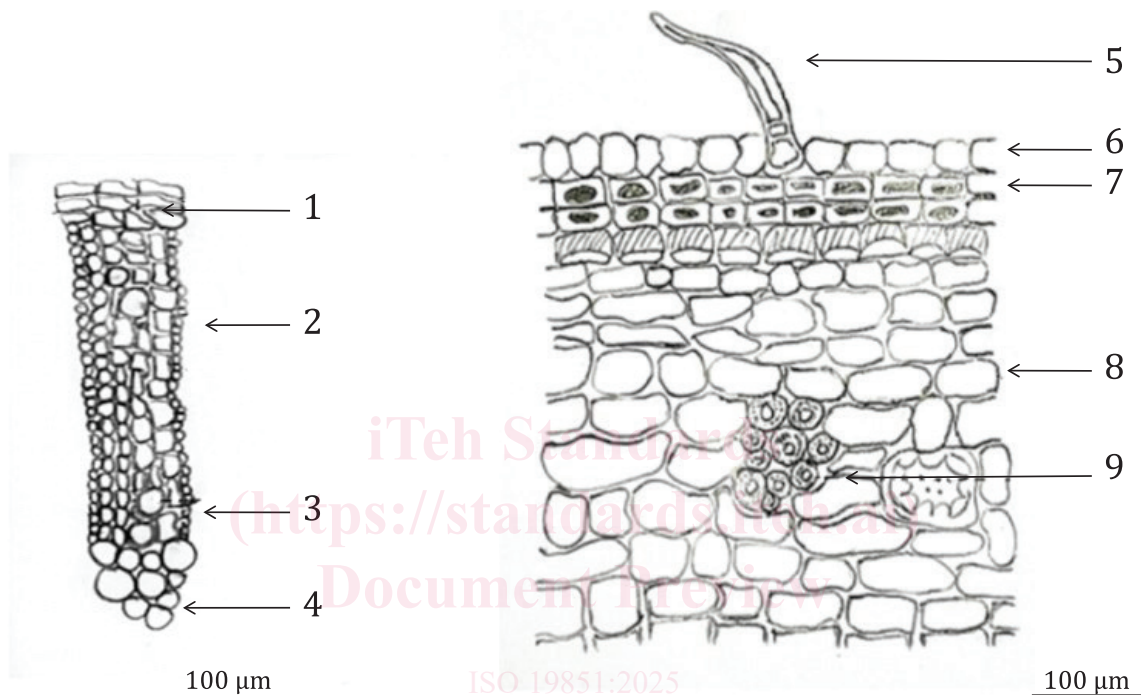
- a) The branches are long and cylindrical, with multiple branches, 30 cm to 75 cm long, 0,3 cm to 1 cm in diameter at the thicker end.
- b) The external surface is reddish-brown to brown, with longitudinal ridges, fine wrinkles, dotted lenticels, pimple-like leaf scars, branch scars and bud scars. The texture is hard and fragile, easily broken.
- c) The slice thickness is 2 mm to 4 mm. On the cut surface, the bark is reddish-brown; the wood is yellowish-white to light yellowish-brown, and the pith is slightly square.
- d) This product has a special aroma, with a sweet and slightly pungent taste. The bark has a strong flavour.



### 5.3 Microscopic features

#### 5.3.1 Transverse section

The epidermis consists of a single layer of cells, and unicellular nonglandular hairs are sometimes visible in young branches. The cork layer comprises 3 to 5 layers of cells, with the outer walls of cells in the innermost layer being thickened. Oil cells and stone cells are scattered in the cortex. Groups of stone cells in the pericycle are intermittently arranged in rings, accompanied by fibre bundles. The phloem contains scattered secretory cells and fibres. The cambium is distinct. The xylem rays are 1 to 2 cells wide and contain brown substances; vessels are scattered singly or 2 to several aggregated; the walls of wood fibres are thin and indistinguishable from xylem parenchyma cells. In the pith, cell walls are slightly thickened and lignified. Small calcium oxalate needle crystals are occasionally observed in ray cells (see [Figure 2](#)).



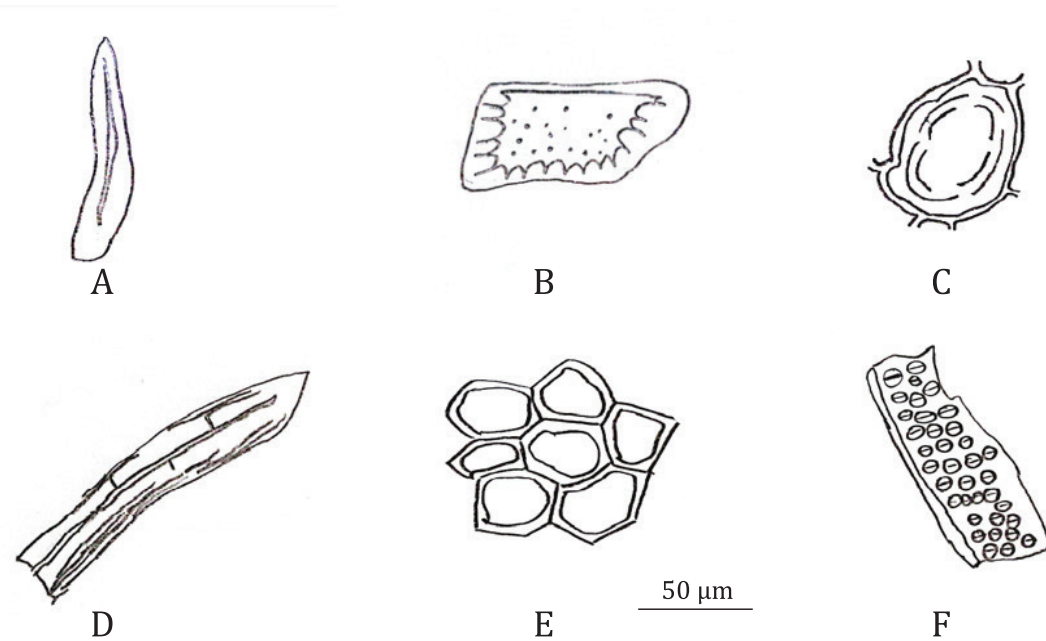
#### Key

1	cambium	5	nonglandular-hair
2	ray	6	epidermis
3	vessel	7	cork layer
4	medulla	8	cortex
		9	fibre bundle

Figure 2 — Microscopic features of transverse section of *Cinnamomum cassia* Presl. (Lauraceae)

#### 5.3.2 Powder

The powder is reddish-brown. The stone cells are subsquare or subrounded, 30 µm to 64 µm in diameter; the walls are thick, although some walls are thin on one side. The phloem fibres are mostly fascicular or scattered singly, colourless or brown, fusiform, with some edge being dentate protruding, 12 µm to 40 µm in diameter, with very thick and lignified walls, and inconspicuous pores and furrows. The oil cells are subround or elliptic, 41 µm to 104 µm in diameter. The wood fibres are numerous and often appear in bundles, with twill holes or intersecting into a cross. The cork cells are yellowish-brown, polygonal in surface view, and contain reddish brown matter. The vessels are mainly with bordered pits and up to 76 µm in diameter (see [Figure 3](#)).



**Key**

- |   |              |   |            |
|---|--------------|---|------------|
| A | phloem fibre | B | stone cell |
| C | oil cell     | D | wood fibre |
| E | cork cell    | F | vessel     |

**Figure 3 — Microscopic features of the powder of *Cinnamomum cassia* Presl. (Lauraceae)**

**5.4 Thin-layer chromatogram identification**

When thin-layer chromatogram identification (TLC) is performed, the TLC shall present the spots specific to *Cinnamomum cassia* branch.

**5.5 Moisture**

The mass fraction of moisture should not be more than 15,0 %.

**5.6 Total ash**

The mass fraction of total ash should not be more than 4,0 %.

**5.7 Ethanol-soluble extractives**

The mass fraction of ethanol-soluble extracts should be determined.

**5.8 Marker compounds**

The mass fractions of marker compounds, such as cinnamaldehyde, should be determined.

**5.9 Heavy metals**

The mass fractions of heavy metals, such as arsenic, mercury, lead and cadmium, should be determined.