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**Traditional Chinese medicine —  
General requirements for industrial  
manufacturing process of red ginseng  
(*Panax ginseng* C.A. Meyer)**

*Médecine traditionnelle chinoise — Exigences générales pour le  
procédé de fabrication industrielle du ginseng rouge (Panax ginseng  
C.A. Meyer)*

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# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 General</b> .....	<b>2</b>
4.1 Starting material.....	2
4.1.1 Pesticides.....	2
4.1.2 Heavy metals.....	2
4.2 Factory environment.....	2
4.3 Machines.....	2
4.3.1 General.....	2
4.3.2 Washing machine.....	2
4.3.3 Steaming machine.....	3
4.3.4 Drying machine.....	3
4.3.5 Packaging machine.....	3
<b>5 Industrial manufacturing process of red ginseng</b> .....	<b>4</b>
5.1 General.....	4
5.2 Washing.....	5
5.2.1 General.....	5
5.2.2 Quality of water.....	5
5.2.3 Washing procedure.....	5
5.3 Steaming.....	5
5.3.1 General.....	5
5.3.2 Classification for steaming.....	5
5.3.3 Steaming condition.....	6
5.4 Drying.....	7
5.4.1 General.....	7
5.4.2 Drying guidelines.....	7
5.4.3 Hot air drying.....	7
5.4.4 Sun drying.....	7
<b>6 Packaging and labelling</b> .....	<b>7</b>
6.1 General.....	7
6.2 Packaging.....	8
6.3 Labelling.....	8
6.3.1 General.....	8
6.3.2 Expiration date.....	9
<b>Bibliography</b> .....	<b>10</b>

## 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 documents 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)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). (standards.iteh.ai)

The committee responsible for this document is ISO/TC 249, *Traditional Chinese medicine*.

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# Traditional Chinese medicine — General requirements for industrial manufacturing process of red ginseng (*Panax ginseng* C.A. Meyer)

## 1 Scope

This document specifies the general requirements for the industrial manufacturing process of red ginseng from *Panax ginseng* C.A. Meyer which is the only species from which red ginseng is processed[6-11]. It is intended that manufacturers perform the appropriate washing, steaming, drying and packaging processes to assure the quality of red ginseng products for consumers.

## 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 14159, *Safety of machinery — Hygiene requirements for the design of machinery*

WHO Guidelines for drinking-water quality, fourth edition

## 3 Terms and definitions

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

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

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

### 3.1

#### **fresh ginseng**

ginseng root harvested from the field, before being washed

### 3.2

#### **washed ginseng**

raw ginseng root washed with drinking water to remove any foreign matter and which is then used as the starting material for manufacturing red ginseng

### 3.3

#### **steamed ginseng**

ginseng produced through a process of steaming the washed ginseng to gelatinize the starch content

### 3.4

#### **red ginseng**

ginseng root from *Panax ginseng* C.A. Meyer, treated with steam and then dried and packaged as whole or cut roots

### 3.5

#### **cultivated years**

number of years of cultivation after budding seeds

**3.6**

**foreign matter**

soil, dust, dirt, insects and other contaminants

**3.7**

**expiration date**

date until which the manufacturer guarantees the quality and safety of red ginseng product under defined conditions

**3.8**

**red ginseng product**

red ginseng that is packaged in appropriate packaging material

**3.9**

**place of cultivation**

place at which ginseng was cultivated

**3.10**

**lot number**

number assigned by the manufacturer to a group of uniform products for tracing the product history

**4 General**

**4.1 Starting material**

Starting material for manufacturing red ginseng is fresh ginseng which has been cultivated for four to six years.

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**4.1.1 Pesticides**

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Levels of pesticides residue for fresh ginseng are specified in accordance with domestic and/or international regulations.

**4.1.2 Heavy metals**

Levels of heavy metals for fresh ginseng are specified in accordance with domestic and/or international regulations.

NOTE For information on levels of heavy metals, see ISO 18664:2015, Table A.

**4.2 Factory environment**

Working environment shall be designed to reduce the potential for contamination during the processing of red ginseng.

**4.3 Machines**

**4.3.1 General**

Equipment and utensils which come in direct contact with the fresh ginseng shall be of appropriate design and construction to ensure the quality of the red ginseng.

**4.3.2 Washing machine**

**4.3.2.1 General**

Washing machine shall completely remove foreign matter from the fresh ginseng.

#### 4.3.2.2 Function of washing machine

For the mass washing of fresh ginseng, a washing machine that has the following functions is required:

- a) it shall be able to spray water at a sufficient pressure to remove foreign matter but that does not cause damage to the fresh ginseng;
- b) the washing machine spray function shall be designed to wash every surface of the fresh ginseng;
- c) it shall be designed in accordance with ISO 14159.

#### 4.3.3 Steaming machine

##### 4.3.3.1 General

Steaming machine shall generate saturated steam and maintain the required temperature for the duration of the processing.

##### 4.3.3.2 Function of steaming machine

For the mass steaming of washed ginseng, a steaming machine with the following functions is required:

- a) the temperature of the machine shall be controlled;
- b) it shall be designed to distribute the steam evenly on the washed ginseng;
- c) it shall be designed in accordance with ISO 14159;
- d) the internal structure shall be designed to be adequately cleaned and properly maintained.

##### 4.3.4 Drying machine

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##### 4.3.4.1 General

Drying machine shall be designed to maintain the proper temperature and humidity.

##### 4.3.4.2 Function of drying machine

For large-scale drying of steamed ginseng, the drying machine requires the following functions:

- a) the temperature and humidity inside the dryer shall be well controlled;
- b) it shall be designed to deliver a uniform flow of dry air to the steamed ginseng;
- c) it shall be designed in accordance with ISO 14159;
- d) the internal structure shall be designed to be adequately cleaned and properly maintained.

#### 4.3.5 Packaging machine

##### 4.3.5.1 General

Packaging machine shall be designed for red ginseng to be packaged appropriately.

##### 4.3.5.2 Function of packaging machine

Packaging machine shall be designed in accordance with ISO 14159.

## 5 Industrial manufacturing process of red ginseng

### 5.1 General

As fresh ginseng has high water content, it is subject to degradation by enzymes and spoilage by microbial contamination, making the product easily damaged as the storage period increases.

However, the stability increases as fresh ginseng is processed to red ginseng (see [Figure 1](#)).

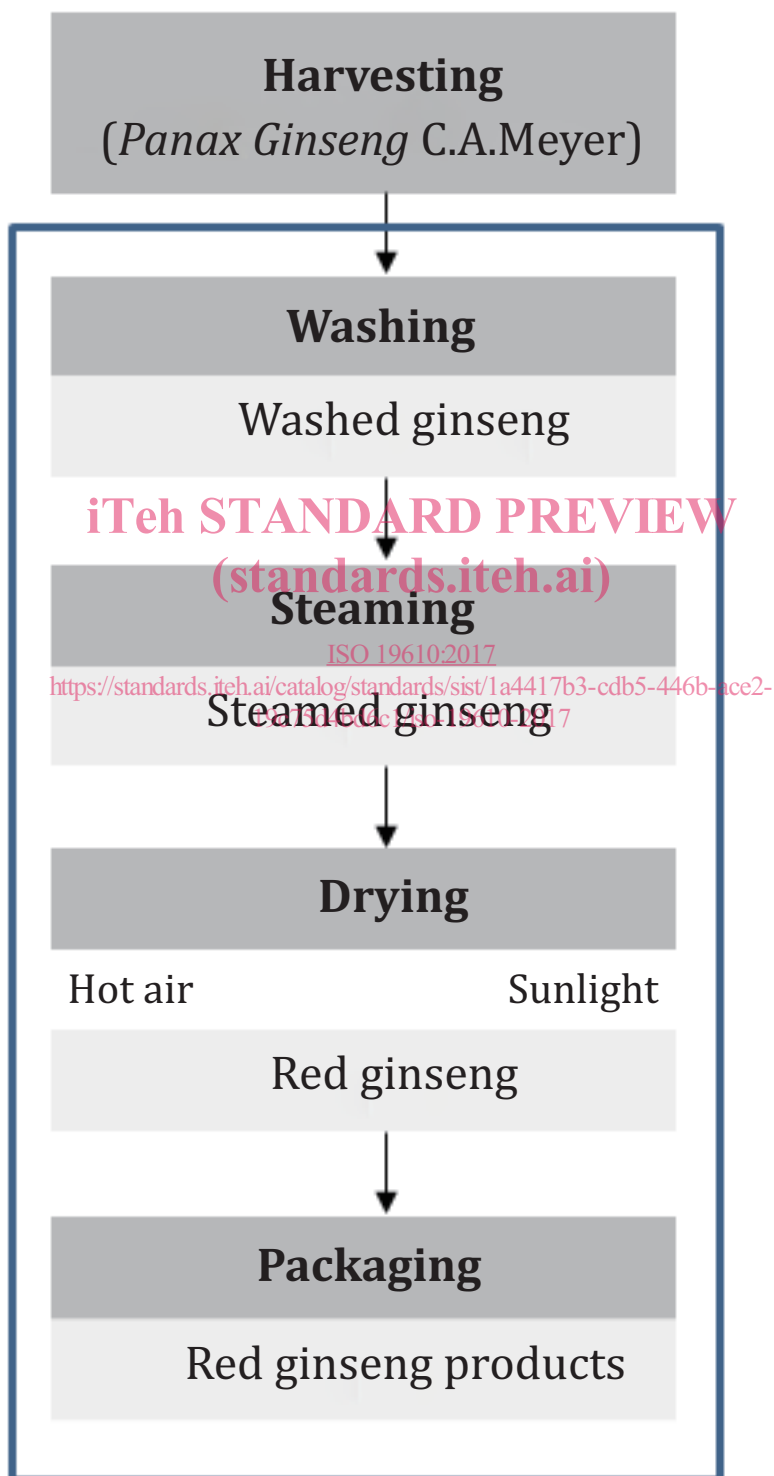


Figure 1 — Industrial manufacturing process of red ginseng



After the fresh ginseng is harvested, the washing and steaming processes are performed consecutively, followed by drying with sunlight or hot air dryer until the appropriate moisture content is met for the improved storage characteristics.

## 5.2 Washing

### 5.2.1 General

Harvested fresh ginseng shall be washed hygienically to completely remove soil and other foreign matter.

### 5.2.2 Quality of water

Quality of water for washing fresh ginseng shall meet the requirements of the WHO Guideline for Drinking Water Quality.

### 5.2.3 Washing procedure

Appropriate measures for washing shall be implemented for removing soil and debris completely from fresh ginseng. A washing procedure for fresh ginseng is recommended as below:

- a) wash the fresh ginseng with a tumbler or low damageable conveyor type washer through a high pressure water spray to remove the foreign matter such as soils;
- b) rewash if the washed ginseng is not completely washed by visual check;
- c) any method that can remove the foreign matter successfully will be appropriate.

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## 5.3 Steaming

[ISO 19610:2017](https://standards.iteh.ai/catalog/standards/sist/1a4417b3-cdb5-446b-ace2-19c75d4bd6c1/iso-19610-2017)

### 5.3.1 General <https://standards.iteh.ai/catalog/standards/sist/1a4417b3-cdb5-446b-ace2-19c75d4bd6c1/iso-19610-2017>

Process of steaming is an important stage in determining the quality of red ginseng. Fresh ginseng contains about 30 % starch which is gelatinized with heat treatment. The steaming process shall provide enough heat for a sufficient period of time to gelatinize the starch.

NOTE Ginseng starch crystallization is gradually lost at between 65 °C and 70 °C and changes to a gel formation. The gelatinization starts at 61 °C and is completely done at 88 °C. However, this result came from using the purified starches, so a higher temperature is required for enough gelatinization from ginseng steaming<sup>[5][13]</sup>.

### 5.3.2 Classification for steaming

#### 5.3.2.1 General

It is necessary that different steaming conditions are utilized depending on the root thickness in order to maintain the quality of red ginseng.

#### 5.3.2.2 Size classification

Basis of classification by size as below:

- size classification is determined by measuring the diameter of the tap root;
- the representative diameter of the tap root is measured at the thickest part of washed ginseng ([Figure 2](#));
- washed ginseng is divided into three groups; large, medium, small (see [Table 1](#)).

NOTE Washed ginseng can be divided further into subgroups, if necessary.