
**Health Informatics — Categorical
structures for the representation of
the decocting process in traditional
Chinese medicine**

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 General.....	1
3.2 Characterizing categories.....	2
4 Categorial structure	3
4.1 Overview.....	3
4.2 Semantic link.....	4
4.2.1 is applied to.....	4
4.2.2 insert in.....	4
4.2.3 is boiled in.....	4
4.2.4 is merged with.....	5
4.2.5 is a result of.....	5
4.2.6 use.....	5
Bibliography	6

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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 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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 215, *Health informatics*.

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.

Introduction

Traditional Chinese Medicine (TCM) is widely used as a part of complementary and alternative medicine treatments worldwide. Decoction is the most common method for taking TCM medication. It is also the most common extraction method used to manufacture various dosage forms of TCM medication, such as granules or liquids. It is also necessary to represent the categorial structure describing the decocting process involved in the determination of therapeutic equivalence.

Guidelines prescribing decoction in clinical trials and in research are already available. A large number of clinical trials have been conducted to determine the efficacy and efficiency of decoction. However, the heterogeneity of descriptions among trials often causes difficulties in synthesizing the data found in meta-analyses. This is a result of the following three reasons: firstly, an appropriate information structure of decocting process has not yet been formulated; secondly, the peculiar concepts within traditional medicine in the western pacific-rim region that originated in China are not considered sufficient; thirdly, semantic associations between concepts of decoction need to be explicit.

This document defines the minimal categorial structures used by terminological systems in the field of decoction in order to address the aforementioned issues.

The potential benefits of this document include

- supporting developers to provide new terminological systems concerning the decocting process,
- supporting developers to provide new detailed content areas for existing terminological systems on the decocting process,
- facilitating the representation of the decocting process using a standardized core model in a manner suitable for computer processing,
- providing a conceptual framework for the generation of a compositional concept representation of the decocting process,
- facilitating the mapping and improved semantic correspondence between different terminologies by proposing a core specification for the decocting process,
- providing a core model to describe the structure of the decocting process and to facilitate improved semantic correspondence with information models,
- providing a tool for text mining on the decocting process, for database construction and for ancient document processing over a wide area of TCM information collection and processing, and
- providing a new method for researchers to conduct relevant research and implement relevant ideas for the development of TCM disciplines.

The target groups for this document are

- stakeholders, such as companies that offer systems that use electronic categorial structures, by helping these build knowledge databases or by automatic processing of the medical literature,
- EHR or health IT vendors who can be given assistance on prescribing decoction or support in clinical decision making, and
- researchers assisted in performing text mining.

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Health Informatics — Categorical structures for the representation of the decocting process in traditional Chinese medicine

1 Scope

This document aims to specify categorical structures in the field of decoction.

This document describes a concept system detailing domain constraints of sanctioned characteristics, each composed of a semantic link and applicable characterizing categories.

The following topics are out of scope of this document:

- models of decoction pieces;
- the specification of categorical structures for the representation of post or manufacturing processes of decoction such as packaging;
- individual pharmaceutical, medicinal products or herbal substances.

This document is applicable to terminological systems/resources.

2 Normative references

There are no normative references in this document.

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 <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 General

3.1.1 decoction

<preparation> liquid medicine prepared by boiling *decoction pieces* (3.1.4) in water or in water with alcohol

3.1.2 decoction decocting process decoction process

<method> procedure for making *decoction* (3.1.1), including parameters such as apparatus, temperature, pressure and time

EXAMPLE See 4.2.3.

3.1.3

decocting wrap

pouch in which *decoction pieces* (3.1.4) are placed made of cotton or synthetic fibres, used to prevent decoction pieces from sticking to the bottom of the *decoction apparatus* (3.1.5)

3.1.4

decoction piece

prescription medicinal processed from Chinese materia medica under the direction of traditional Chinese medicine and processing methods for Chinese medicines which can be directly used in clinical practice or the production of prepared medicines

3.1.5

decoction apparatus

device that produces a *decoction* (3.1.1) by extracting prepared *decoction pieces* (3.1.4) with *decoction solvent* (3.2.4)

3.1.6

insertion time

time point at which prepared *decoction pieces* (3.1.4) enter the *decoction apparatus* (3.1.5) from the beginning of the *decocting process* (3.1.2)

3.2 Characterizing categories

3.2.1

insertion sequence

procedure consisting of adding *prepared decoction pieces* (3.2.2) to the *decoction apparatus* (3.1.5) and boiling them according to the order of *insertion time* (3.1.6)

EXAMPLE 1 <decocting process> has <decoction first (as insertion sequence)> which as a value of insertion time is <0> and <decoction later (as insertion sequence)> which as a value of insertion time is <50>.

EXAMPLE 2 See 4.2.2.

Note 1 to entry: <decoction first (as insertion sequence)> always has an insertion time value of zero.

Note 2 to entry: <decoction later (as insertion sequence)> has a larger insertion time value than other medicinal materials.

Note 3 to entry: <melting by heat (as insertion sequence)> always has the same insertion time value as the value of the *total decocting duration* (3.2.5).

3.2.2

prepared decoction piece

decoction piece (3.1.4) which has been processed by *decoction preparation* (3.2.3) and which is ready to boil

EXAMPLE <soaked ginseng (as prepared decoction pieces)> is the result of (see 4.2.5) <immersion preparation (as decoction preparation)> which used <ginseng (as decoction pieces)> for <10 minutes> at <24 °C>.

3.2.3

decoction preparation

pretreatment of *decoction pieces* (3.1.4) to make extraction easier to or enhance the therapeutic effect

Note 1 to entry: It is an optional process and it is not included in the decocting process.

Note 2 to entry: Soaking, which is an example of decoction preparation, is a kind of water processing whose aim is to facilitate the extraction of active ingredients.

EXAMPLE See 3.2.2.

3.2.4

decoction solvent

liquid used for dissolving compound from *prepared decoction pieces* (3.1.4)

EXAMPLE 1 <decoct with water [as a *decocting process* (3.1.2)]> uses <water [as *decoction solvent* (3.2.4)]> <1 000 ml>.

EXAMPLE 2 <decoct with water and alcohol [as a *decocting process*]> uses <water [as *decoction solvent*]> <500 ml> and <rice wine (as *decoction solvent*)> <500 ml>.

Note 1 to entry: In traditional medicine, alcohol refers to a liqueur such as a traditional rice wine, sake and Chinese white wine. These can be represented by the content of ethanol but defining the specification of alcohol is not in scope.

Note 2 to entry: The unit of volume which is a value of *decoction solvent* should use the international system of units (see the ISO 80000 series).

3.2.5

total decocting duration

period from the time when the first material is put in the *decoction apparatus* (3.1.5) to the end of the *decocting process* (3.1.2)

4 Categorical structure

4.1 Overview

The formal concept representation system in the field of decoction includes characterizing categories (see 3.2) and semantic links (see 4.2).

The outline of those characterizing categories and semantic links is illustrated in a concept diagram in [Figure 1](#).

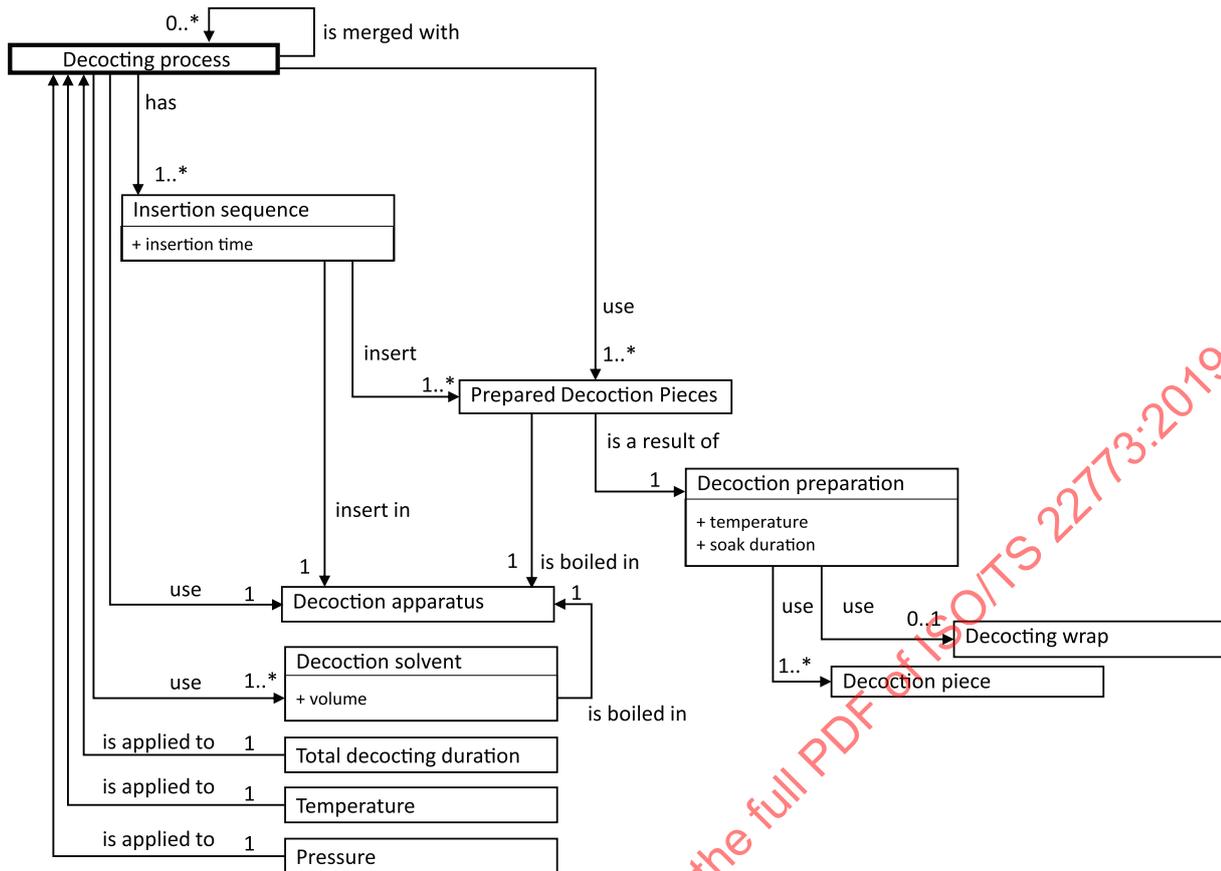


Figure 1 — Concept diagram for representation of decoction

4.2 Semantic link

4.2.1 is applied to

Method or condition used for the decoction process (see 3.1.2).

It expresses the semantic link between the decoction process and the parameters of the decoction process, such as the total decoctioning duration (see 3.2.5).

EXAMPLE A decoction process is applied to <120 minutes (as total decoctioning duration)> at <100 °C (as temperature)> and <1 atm (101,325 kPa) (as pressure)>.

4.2.2 insert in

Materials that have time order are put in a decoction apparatus (see 3.1.5).

It expresses the semantic link between the insertion sequence (see 3.2.1) and the decoction apparatus in a decoction process (see 3.1.2).

EXAMPLE A decoction process has insertion sequences (as insertion sequence) as the followings: <decoction first (as insertion sequence)> insert <prepared [as prepared decoction pieces (see 3.2.2)] Gypsum [as decoction piece (see 3.1.4)]> in <decoction apparatus> <insertion time = 0>; <decoction later (as insertion sequence)> insert <prepared (as prepared decoction pieces) Mint (as decoction piece)> in <decoction apparatus> <insertion time = 50>.

4.2.3 is boiled in

Materials is heated in a decoction apparatus (see 3.1.5).

It expresses the semantic link between the prepared decoction pieces (see [3.2.2](#)), the decoction solvent (see [3.2.4](#)) and the decoction apparatus used for boiling.

EXAMPLE <prepared ginseng> and <water> is boiled in <decoction apparatus>.

4.2.4 is merged with

The result of the decocting process is mixed with the result of another decocting process.

It expresses the semantic link between the decocting process (see [3.1.2](#)) and another decocting process for representation of a series of decocting processes.

EXAMPLE <decoct separately (as decocting process)> is merged with one decocting process and another decocting process.

4.2.5 is a result of

Materials occurring as a consequence of the processing of medicinals such as water processing and wrapping.

It expresses the semantic link between the prepared decoction pieces (see [3.2.2](#)) and the decoction preparation (see [3.2.3](#)).

EXAMPLE See [3.2.2](#).

4.2.6 use

Apparatus or materials are employed to make decoction (see [3.1.1](#)).

It expresses the semantic link between the decocting process (see [3.1.2](#)), the prepared decoction pieces (see [3.2.2](#)), the decoction apparatus (see [3.1.5](#)), and the decoction solvent (see [3.2.4](#)).

EXAMPLE <wrap-decoct> use <fabric decocting wrap>.