
**Health informatics — Categorical
structures for representation of
acupuncture —**

**Part 6:
Acupuncture effects**

*Informatique de santé — Structures catégoriques pour la
représentation de l'acupuncture —*

Partie 6: Effets de l'acupuncture

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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*, in collaboration with Technical Committee ISO/TC 249, *Traditional Chinese medicine*.

A list of all parts in the ISO 16843 series can be found on the ISO website.

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

Acupuncture therapy is being widely practiced in many countries. Acupuncture therapy is used to treat many diseases by regulating the physiological functions of the internal organs (zang-fu) and body systems. Stimulating the acupoints with an acupuncture needle or with electro acupuncture can directly or indirectly cause changes in organs, tissues, cells, molecules and other chemical substances, then affects physiological or pathological functions in human body or experimental animals. The effects of acupuncture can be measured by laboratory tests or clinical observations.

A large number of clinical research studies and animal experiments have been conducted to assess the mechanism of acupuncture therapy. However, the descriptions of acupuncture effects in clinical reports or experimental reports tend to be insufficient or inconsistent for interpretation of heterogeneity, thus causing difficulties in synthesizing data for analysis. This arises from two reasons:

- a) An appropriate categorial structure for the acupuncture effect has not been formulated;
- b) Semantic associations between the concepts of the acupuncture effect need to be made more explicit.

This document aims at solving these existing problems.

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Health informatics — Categorial structures for representation of acupuncture —

Part 6: Acupuncture effects

1 Scope

This document specifies the categorial structure within the field of acupuncture effects by defining a set of domain constraints of sanctioned characteristics, each consisting of a semantic link and an applicable characterizing category.

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 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 General

3.1.1

concept

unit of knowledge created by a unique combination of characteristics

Note 1 to entry: A concept can have one or more names. It can be represented using one or more terms, pictures, icons or sounds.

[SOURCE: ISO/TS 16843-2:2015, 3.1]

3.1.2

categorial structure

minimal set of domain constraints for representing concept systems in a subject field

[SOURCE: ISO 17115:2020, 3.1.1, modified]

3.1.3

category

division of sets of entities regarded as having particular shared characteristics

EXAMPLE Oral route, subcutaneous route and all other routes share characteristics particular to the category route.

Note 1 to entry: Categories can be more or less general. Where one category is subsumed by another, the 'is a' relation is asserted to obtain a hierarchy between the more specific or subsumed category and the more general or subsuming category. For example, parenteral route is more general than intravenous route.

[SOURCE: ISO/TS 16843-2:2015, 3.3]

3.1.4

characterizing category

category (3.1.3) of characteristics which serves as the criterion of subdivision when establishing concept systems

EXAMPLE The type of characteristics 'colour' includes being red, blue, green, etc. The type of characteristics 'material' includes made of wood, metal, etc.

[SOURCE: ISO 17115:2020, 3.1.3, modified]

3.1.5

semantic link

formal representation of a directed associative relation or partitive relation between two concepts

EXAMPLE is Cause Of (with inverse has Cause); has Location (with inverse is Location Of)

Note 1 to entry: This includes all relations except the generic relation.

Note 2 to entry: A semantic link always has an inverse, i.e. another semantic link with the opposite direction.

[SOURCE: ISO/TS 16843-2:2015, 3.5]

3.2 Characterizing categories

3.2.1

acupuncture therapy

treatment of disease by inserting needles along specific pathways or meridians at an acupuncture point

Note 1 to entry: The placement of the acupuncture needle varies with the disease being treated. It is sometimes used in conjunction with heat, moxibustion, acupressure, or electric stimulation.

EXAMPLE Electro-acupuncture, ear acupuncture, Transcutaneous Electrical Nerve Stimulation (TENS).

[SOURCE: MeSH Heading, modified]

3.2.2

needling method

use of a specially made needle to stimulate the acupoints or parts of the body to treat disease

EXAMPLE Piercing Method, Encircling needling.

[SOURCE: MeSH Heading, modified]

3.2.3

acupuncture point

anatomical zone to which a stimulus is applied with the intention to induce reaction(s) for diagnosis or therapy

EXAMPLE GUANYUAN point, ZUSANLI point.

[SOURCE: ISO/TS 16843-1:2016, 3.7, modified]

3.2.4

anatomical structure

structure of organisms, including body regions, cellular component, cells, tissues, organs, and body systems

EXAMPLE Brain, neurons.

[SOURCE: Human Anatomy and Histoembryology Terms Review Committee, 2014]

3.2.5 disorder

condition which represents a set of dysfunction with associated body manifestations and is often defined by typical chief symptom, sequential pathological process body state or aetiology.

EXAMPLE Atherosclerosis model, chronic fatigue syndrome, Spleen Deficiency.

3.2.6 biological process

specific objective that the organism is genetically programmed to achieve

EXAMPLE Angiogenesis, neuroprotection, cortical excitability.

[SOURCE: Gene Ontology: 0008150, modified]

3.2.6.1 cellular process

process that occurs at the cellular level, but not necessarily restricted to a single cell

Note 1 to entry: For example, cell communication occurs among more than one cell, but occurs at the cellular level.

EXAMPLE autophagy, glial cell activation, mesenchymal stem cell migration, neuron apoptotic process.

[SOURCE: Gene Ontology: 0009987, modified]

3.2.6.2 behaviour

internally coordinated responses (actions or inactions) of animals (individuals or groups) to internal or external stimuli, via a mechanism that involves nervous system activity

EXAMPLE Learning, memory, motor behaviour.

[SOURCE: Gene Ontology: 0007610, modified]

3.2.6.3 response to stimulus

process that results in a change of state or activity of a cell or an organism (in terms of movement, secretion, enzyme production, gene expression, etc.) as a result of a stimulus

Note 1 to entry: The process begins with detection of the stimulus and ends with a change in state or activity of the cell or organism.

EXAMPLE Inflammation.

[SOURCE: Gene Ontology: 0050896, modified]

3.2.6.4 biological regulation

process that modulates a measurable attribute of any biological process, quality or function

EXAMPLE Regulation of hormone levels, regulation of blood pressure, MyD88-dependent toll-like receptor 4 signalling pathway, toll-like receptor 4 signalling pathway.

[SOURCE: Gene Ontology: 0065007, modified]

3.2.6.5 developmental process

biological process whose specific outcome is the progression of an integrated living unit: an anatomical structure (which can be a subcellular structure, cell, tissue, or organ), or organism over time from an initial condition to a later condition

EXAMPLE Angiogenesis.

[SOURCE: Gene Ontology: 0032502, modified]

3.2.6.6

metabolic process

chemical reactions and pathways, including anabolism and catabolism, by which living organisms transform chemical substances

Note 1 to entry: Metabolic processes typically transform small molecules, but also include macromolecular processes such as DNA repair and replication, and protein synthesis and degradation.

EXAMPLE Glucose metabolic process, regulation of blood-brain barrier permeability, digestion, gastric emptying.

[SOURCE: Gene Ontology: 0008152, modified]

3.2.6.7

multicellular organismal process

biological process occurring at the level of a multicellular organism, pertinent to its function

EXAMPLE Gastric motility.

[SOURCE: Gene Ontology: 0032501, modified]

3.2.6.8

localization

process in which a cell, a substance, or a cellular entity, such as a protein complex or organelle, is transported, tethered to or otherwise maintained in a specific location

Note 1 to entry: In the case of substances, localization can also be achieved via selective degradation.

EXAMPLE 5-hydroxytryptamine secretion, oestradiol secretion, calcium ion transport.

[SOURCE: Gene Ontology: 0051179, modified]

3.2.7

gene expression

process of gene transcription and translation, and the product is RNA or protein

EXAMPLE 5-hydroxytryptamine receptor 1A(HTR1A), glial fibrillary acidic protein (GFAP).

[SOURCE: Microbial Biology, 2018]

3.2.8

molecular function

molecular process that can be carried out by the action of a single macromolecular machine, usually via direct physical interactions with other molecular entities

Note 1 to entry: Function in this sense denotes an action, or activity, that a gene product (or a complex) performs. These actions are described from two distinct but related perspectives: (1) biochemical activity, and (2) role as a component in a larger system/process.

EXAMPLE Glutathione dehydrogenase (ascorbate) activity, ATPase activity.

[SOURCE: Gene Ontology: 0003674, modified]

3.2.9

endogenous ligand

active molecules such as neurotransmitters, hormones and certain neuromodulators, which can activate the corresponding receptors and trigger specific physiological effects

EXAMPLE Serotonin, Dopamine, Norepinephrine.

[SOURCE: Introduction to Brain Science, 2001]

4 Categorial structure

4.1 Overview

The scientific basis of the acupuncture effect is the main aspect of acupuncture action principle. Through the representation of acupuncture effects, the scientific basis for the regulation effects of acupuncture on body systems can be clarified.

The formal concept representation system, as defined in ISO 17115, in the field of acupuncture effects includes semantic links to characterizing categories. The outline of those characterizing categories and semantic links is illustrated in [Figure 1](#).

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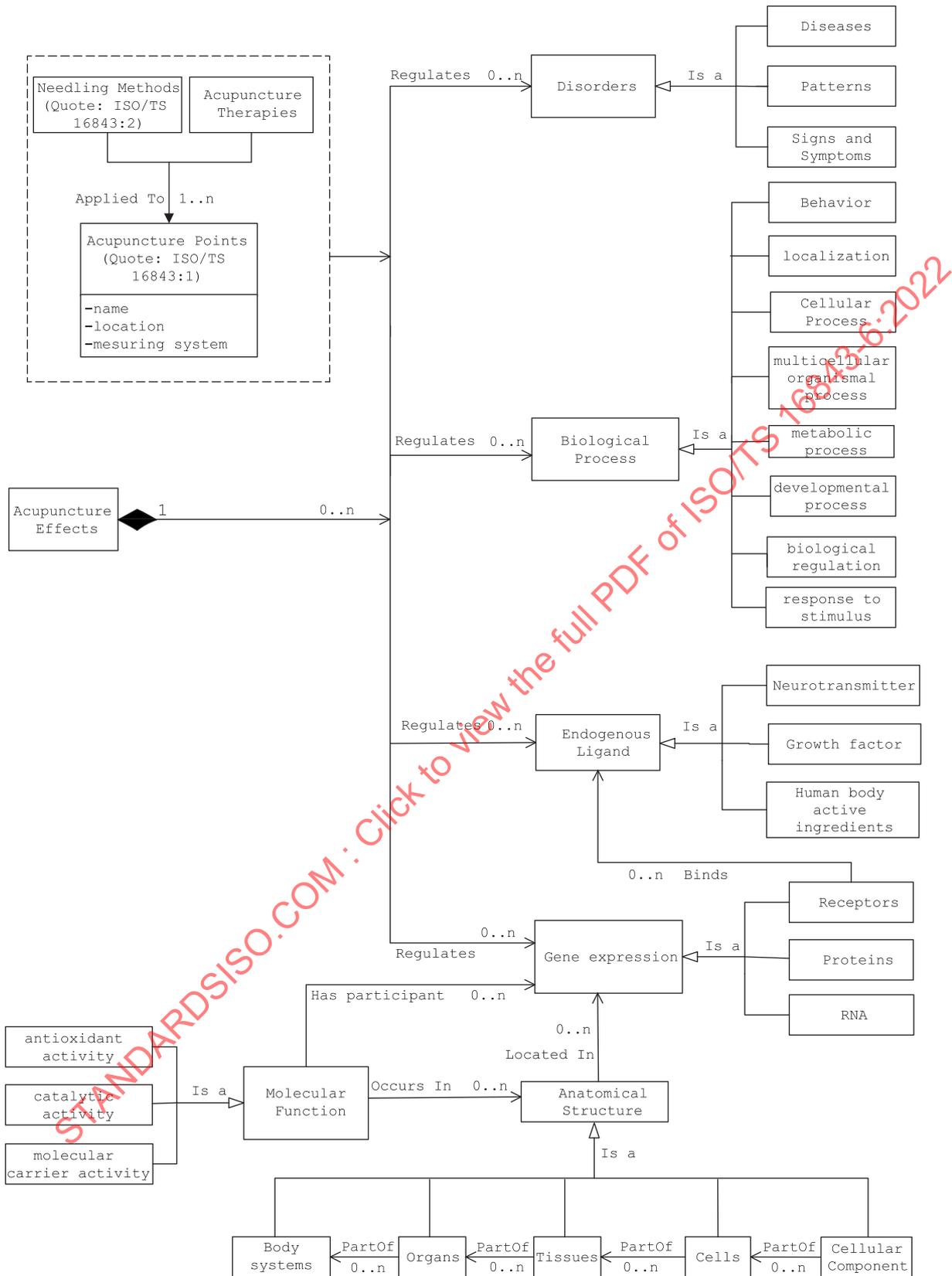


Figure 1 — UML diagram for representation of acupuncture effects