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Senzorična analiza - Metodologija - Metoda proučevanja občutljivosti okusa

Sensory analysis - Methodology - Method of investigating sensitivity of taste

Analyse sensorielle - Méthodologie - Méthode d'éveil à la sensibilité gustative

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Sensory analysis — Methodology — Method of investigating sensitivity of taste

Analyse sensorielle — Méthodologie — Méthode d'éveil à la sensibilité gustative

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3972 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 12, *Sensory analysis*.

This third edition cancels and replaces the second edition (ISO 3972:1991), which has been technically revised.

Sensory analysis — Methodology — Method of investigating sensitivity of taste

1 Scope

This International Standard specifies a set of objective tests for familiarizing assessors with sensory analysis. The test methods specified can be useful to:

a) teach assessors to recognize tastes and to distinguish between them (see Clause 8);

b) teach assessors to know and to familiarize themselves with different types of threshold tests (see Clause 9);

c) make assessors aware of their own sensitivity of taste;

d) enable test supervisors to carry out a preliminary categorization of assessors.

The methods can also be used as a periodic monitor of the sensitivity of taste of assessors who are already members of sensory analysis panels.

2 Normative references

The following referenced documents are indispensable for the application 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 5492:2008, *Sensory analysis — Vocabulary*

ISO 6658, *Sensory analysis — Methodology — General guidance*

ISO 8586, *Sensory analysis — General guidelines for the selection, training and monitoring of selected and expert assessors*

ISO 8589, *Sensory analysis — General guidance for the design of test rooms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5492 (in particular 3.1, 3.2, and 3.3) and the following apply.

3.1
stimulus threshold
minimum value of a sensory stimulus needed to give rise to a sensation

NOTE 1 The term “threshold” is always used with a qualifying term.

NOTE 2 The sensation need not be identified.

[ISO 5492:2008, 2.25]

3.2
recognition threshold
minimum physical intensity of a stimulus for which an assessor will assign the same descriptor each time it is presented

NOTE The term “threshold” is always used with a qualifying term.

[ISO 5492:2008, 2.26]

3.3
difference threshold
value of the smallest perceptible difference in the physical intensity of a stimulus

NOTE The term “threshold” is always used with a qualifying term.

[ISO 5492:2008, 2.27]

3.4
satiation threshold
minimum concentration of a sensory stimulus without a perception of an increasing concentration

NOTE The term “threshold” is always used with a qualifying term.

4 Principle

4.1 Identification of tastes

Reference substances, in a known order, corresponding to certain tastes, in the form of aqueous solutions of given concentration are presented to each assessor. After each tasting, the taste is identified by the assessors and their assessments recorded.

4.2 Familiarization with the different types of threshold

For each taste, the appropriate reference substance is presented to each assessor, in the form of a series of dilutions of increasing concentration. After each tasting, the results are recorded by the assessors.

5 Reagents

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

5.1 Water, neutral, tasteless, still and odourless, preferably of known hardness.

For recognition of metallic sensation, demineralized water shall be used to avoid oxidation and to get a metallic sensation. In demineralized water and water with a low hardness (spring water), a bitter and sour taste shows lower recognition thresholds.

The water provided to the assessors for rinsing their mouths shall be identical with that used to prepare the dilutions (5.3).

5.2 Stock solutions.

Prepare, in volumetric flasks (6.1), the solutions listed in Table 1 from food-grade reference substances.

5.3 Dilutions.

From the stock solutions specified in Table 1, prepare a series of solutions for each taste in accordance with Table 2.

6 Apparatus

6.1 One-mark volumetric flasks, ISO 1042[3], clean, dry and of suitable capacity for preparing the stock solutions.

6.2 Burettes, ISO 385[1], preferably having automatic zeroing, for preparing the dilutions, or **pipettes,** ISO 648[2].

6.3 Vessels (glasses, beakers), clean, dry, capacity of about 50 ml, for presentation of the test solutions.

Table 1 — Specification of the test solutions

Taste	Reference substance[a]	CAS-Numbers	Concentration g/l
Acid	Citric acid[b]	77-92-9	1,20
Bitter	Caffeine[bc]	58-08-2	0,54
Salty	Sodium chloride	7647-14-5	4,00
Sweet	Sucrose[d]	57-50-1	24,00
Umami	Monosodium glutamate monohydrate	6106-04-3	2,00
Metallic[e]	Iron(II) sulfate heptahydrate[f]	7782-63-0	0,012

The requirements of national regulations concerning authorized products and particularly for food grade safety certification shall be taken into account.

NOTE A quantity of 2 l of stock solution is sufficient for about 20 assessors.

The substances are in accordance with EU Food Law.

[a] The products used shall be free from impurities which could give interfering tastes.

[b] This substance has a better recognition in spring and demineralized water.

[c] Caffeine should be dissolved in hot (80 °C) water.

[d] Sucrose solution is unstable, should be used within 24 h and should be stored chilled until use.

[e] Perception can be modified by the condition of the teeth since certain dental prostheses produce an electrolytic effect.

[f] Iron has to be dissolved only in demineralized water for recognition and to avoid oxidation and colouring. Colouration of the solution is a sign of oxidation. Coloured iron solution shall therefore not be used for investigation sensitivity of taste.

Table 2 — Preparation of the solutions for each taste

Dilution	Acid		Bitter		Salty		Sweet		Umami		Metallic		
	V ml	ρ g/l	V ml	ρ g/l	V ml	ρ g/l	V ml	ρ g/l	V ml	ρ g/l	V ml	ρ g/l	ρ_1 mg/l
D1	500	0,60	500	0,27	500	2,00	500	12,00	500	1,00	500	0,006 0	6,0
D2	400	0,48	400	0,22	350	1,40	300	7,20	350	0,70	350	0,004 2	4,2
D3	320	0,38	320	0,17	245	0,98	180	4,32	245	0,49	245	0,002 9	2,9
D4	256	0,31	256	0,14	172	0,69	108	2,59	172	0,34	172	0,002 0	2,0
D5	205	0,25	205	0,11	120	0,48	65	1,56	120	0,24	120	0,001 4	1,4
D6	164	0,20	164	0,09	84	0,34	39	0,94	84	0,17	84	0,001 0	1,0
D7	131	0,16	131	0,07	59	0,24	23	0,55	59	0,12	59	0,000 8	0,8
D8	105	0,13	105	0,06	41	0,16	14	0,34	41	0,08	41	0,000 5	0,5
Geometrical ratio R	$R = 0{,}8$		$R = 0{,}8$		$R = 0{,}7$		$R = 0{,}6$		$R = 0{,}7$		$R = 0{,}7$		

V is the quantity of the stock solution taken, in millilitres, for 1 l of final solution;

ρ is the concentration of the dilution, in grams per litre;

ρ_1 is the concentration of the dilution, in milligrams per litre.