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Instant coffee — Criteria for authenticity

Café soluble — Critères d'authenticité

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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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.

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Introduction

Soluble coffee represents a sizable fraction of international trade. National and supranational regulations on the ingredients acceptable in soluble coffee, in mixtures thereof, and on their declaration are available.

In order to avoid incorrect declarations that adulterated products are 100 % pure soluble coffee, thus deceiving the consumers and causing unfair competition between manufacturers, statistically sound criteria for the authenticity of soluble coffee are necessary, when subsequent official measures are to be applied.

An International Standard defining the appropriate criteria is therefore justified.

Instant coffee — Criteria for authenticity

1 Scope

This International Standard specifies criteria for authenticity of soluble (instant) coffee.

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 3509, *Coffee and coffee products — Vocabulary*

ISO 11292, *Instant coffee — Determination of free and total carbohydrate contents — Method using high-performance anion-exchange chromatography*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3509, ISO 11292 and the following apply.

3.1
pure soluble coffee
products prepared by the extraction of roasted coffee beans exclusively, as defined in international and national regulations

NOTE 1 See References [1], whose Article 2 gives the definition of “soluble coffee”, and [2], whose annex describes authentic educts and the proper production of soluble coffee.

NOTE 2 Pure soluble coffees have free and total carbohydrate profiles, which depend both on the nature and quality of the green coffee beans used for their manufacture and on processing. The variations of the profiles have been clearly established.

3.2
soluble coffee mixture
mixture prepared by the co-extraction or the separate extraction of roasted coffee beans and of materials other than coffee beans

NOTE The composition of soluble coffee mixtures shall be clearly declared on the label. This category of products shall comply with international or local regulations.

3.3
adulterated soluble coffee
products prepared by the co-extraction or the separate extraction of roasted coffee beans and of raw or roasted materials other than coffee beans, where the product is sold as pure soluble coffee and the addition of the non-coffee bean material is not declared on the label

NOTE Such an addition shifts the free and total carbohydrates outside their natural ranges of variation. This change in the carbohydrate profile indicates adulteration, as outlined in the literature, and in international regulations and statements; see References [3] and [4]. Reference [3] explicitly mentions proof of authenticity of soluble coffee.

4 Detection of adulteration

4.1 General

The adulteration is detected by the determination of the carbohydrate content.

4.2 Method of analysis

Use the method of analysis specified in ISO 11292 to determine the carbohydrate content.

4.3 Distinctive carbohydrates

The determination of the content of two indicator carbohydrates, namely total glucose and total xylose, is sufficient to establish authenticity, independently of the commercial quality of the coffee or of the processing conditions used for the preparation of the soluble coffee.

5 Proof of authenticity

5.1 Maximum content of carbohydrate indicators in pure soluble coffee

The maximum content of the carbohydrate indicators has been determined from the analysis of over 1 000 samples of commercial soluble coffees. The soluble coffees analysed were produced and marketed by different manufacturers in several coffee-producing and coffee-consuming countries, thus covering a wide range of origins, commercial qualities, and conditions of processing. The analyses were carried out in different laboratories, all applying ISO 11292.

The maximum contents of the carbohydrate indicators were calculated using a statistical model called mixture of distributions. The model assumes that the observed overall distribution of a carbohydrate indicator is actually a mixture of several distributions, corresponding to pure soluble coffee and different kinds of adulterated coffees. The distribution with the lowest carbohydrate contents is associated with pure soluble coffee. The maximum content of the carbohydrate is then defined by using a 99 % credibility interval (see Reference [5]).

The maximum content of total glucose and total xylose, expressed as a percentage by mass on dry basis, is given in Table 1.

5.2 Specification limits of carbohydrate indicators in commercial soluble coffee

The specification limit of an indicator carbohydrate is the maximum permitted concentration, above which a soluble coffee is considered as adulterated. The limit is defined as the sum of the maximum content and the expanded uncertainty. The expanded uncertainty has been calculated at a 95 % confidence level, by multiplying the standard uncertainty by a coverage factor of 2; see Reference [6].

Expanded uncertainty and specification limits of total glucose and total xylose, expressed as a percentage by mass on dry basis, are given in Table 1.

Table 1 — Maximum content of carbohydrate indicators in pure soluble coffee, expanded uncertainty and specification limit

Carbohydrate	Maximum content[a] % mass fraction	Expanded uncertainty[b] %	Specification limit %
Total glucose	2,32	0,14	2,46
Total xylose	0,42	0,03	0,45

[a] Source: Reference [5].

[b] Source: Reference [6].

5.3 Use of the specification limits

A commercial product sold as 100 % pure soluble coffee, analysed in accordance with the method specified in ISO 11292, with a total glucose or a total xylose content exceeding its corresponding specification limit shall be considered as adulterated.

For this statement, no further uncertainty of the result needs to be taken into account, as the specification limits have already been set with allowance for measurement uncertainty; see Reference [7].

Bibliography

[1] INTERNATIONAL COFFEE ORGANIZATION. *International Coffee Agreement 2001*. London: ICO, 2000. 44 p.

[2] Directive 1999/4/EC of the European Parliament and of the Council of 22 February 1999, relating to coffee extracts and chicory extracts. *Off. J.* 13 March 1999, **L 66**, pp. 26-29

[3] Commission Directive 2001/54/EC of 11 July 2001 repealing Directive 79/1066/EEC laying down Community methods of analysis for testing coffee extracts and chicory extracts. *Off. J.* 13 July 2001, **L 191**, p. 42

[4] AFCASOLE (Association of European producers of soluble coffee) statement on the authenticity of soluble coffees of 6 July 1995; as confirmed by the ECF (European Coffee Federation, legal successor of AFCASOLE) in January 2007

[5] GIRARD, P., STÖBER, P., BLANC, M., PRODOLLIET, J. Carbohydrate specification limits for the authenticity assessment of soluble (instant) coffee: Statistical approach. *J. AOAC Int*. 2006, **89**(4), pp. 999-1003

[6] STÖBER, P., GILLER, V., SPACK, L., PRODOLLIET, J. Estimation of the measurement uncertainty of the high-performance anion-exchange chromatographic determination of carbohydrates in soluble (instant) coffee. *J. AOAC Int.* 2004, **87**(3), pp. 647-656

[7] Reports on tasks for scientific cooperation (2002), Measurement uncertainty and recovery SANCO/1020/2002-rev.1 March 2002.