



BSI Standards Publication

Food authenticity — Determination of 16-O-Methylcafestol content of green and roasted coffee — HPLC-method

National foreword

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The UK participation in its preparation was entrusted to Technical Committee AW/34/46, Food Authenticity.

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Published by BSI Standards Limited 2024

ISBN 978 0 539 28218 4

ICS 67.140.20

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2024.

Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Food authenticity - Determination of 16-O-Methylcafestol content of green and roasted coffee - HPLC-method

Authenticité des aliments - Détermination de la teneur
en 16-O-méthylcafestol du café vert et torréfié -
Méthode CLHP

Lebensmittelauthentizität - Bestimmung des Gehaltes
an 16-O-Methylcafestol in Roh- und Röstkaffee - HPLC-
Verfahren

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European foreword

This document (EN 18003:2024) has been prepared by Technical Committee CEN/TC 460 “Food authenticity”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

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Introduction

This document was developed in response to demand for an efficient and reliable test method allowing the confirmation of coffee authenticity both for commercial quality control and for official food control.

The coffee species with the greatest commercial importance are *Coffea arabica* and *Coffea canephora* var. *robusta*, commonly known as “arabica” and “robusta”. Within these species, arabica coffees have a significantly higher market value than robusta coffees. For green and roasted coffee samples, the claim “100 % arabica”, “pure arabica” can be authenticated by analysing the mass fraction of 16-O-Methylcafesol (16-OMC). Whereas arabica coffees contain no detectable or only very small amounts of 16-OMC (<20 mg/kg), the mass fractions in robusta coffees are significantly higher in the approximate range of 800 mg/kg to 2 500 mg/kg.

NOTE These published values are quoted as an orientation only and not intended as strict threshold recommendations.

1 Scope

This document specifies a high-performance liquid chromatography (HPLC) method for determining the 16-O-Methylcafestol content in green and roasted coffee.

The method is suitable for a content of 40 mg/kg to 1 600 mg/kg of 16-O-Methylcafestol of green and roasted coffee, respectively. The collaborative study has shown that mass fractions also between 20 mg/kg to 40 mg/kg can be successfully analysed depending on the laboratory equipment.

The compliance assessment process is not part of this document.

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 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

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

16-O-Methylcafestol content

mass fraction of 16-O-Methylcafestol in green coffee or roasted coffee

Note 1 to entry: 16-O-Methylcafestol content is expressed in mg/kg.

4 Principle

An aliquot of the ground and well-mixed sample is hydrolysed using ethanolic potassium hydroxide solution. Then, repeated shaking with *tert*-butylmethylether (*t*BME) isolates the unhydrolysable portion. The combined ether-extract phases are reduced to dryness after being washed. The residue is taken up in HPLC mobile phase, and the 16-O-Methylcafestol content is examined by HPLC.

The substance is identified by comparison of its retention time against that of the standard substance, and quantification is carried out by the external standard method based on peak areas.

5 Reagents

Unless otherwise stated, analytical grade reagents shall be used. The water used shall be of quality grade 1, as described in ISO 3696.

5.1 Acetonitrile, HPLC grade.

5.2 L(+)-Ascorbic acid, 99,5 %, suitable for analytical purposes.

5.3 Ethanol, HPLC grade.