TECHNICAL SPECIFICATION

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English Version

Foodstuffs - Determination of fumonisin B1 and fumonisin B2 in processed maize containing foods for infants and young children - HPLC method with immunoaffinity column cleanup and fluorescence detection after precolumn derivatization

Denrées alimentaires - Dosage de la fumonisine B1 et de la fumonisine B2 dans les aliments pour nourrissons et jeunes enfants contenant du maïs transformé - Méthode par CLHP avec purification sur colonne d'immunoaffinité et détection de fluorescence après dérivation précolonne

Lebensmittel - Bestimmung von Fumonisin B1 und Fumonisin B2 in Säuglings- und Kleinkindernahrung auf Maisbasis - HPLC-Verfahren mit Reinigung an einer Immunoaffinitätssäule und Fluoreszenzdetektion nach Vorsäulenderivatisierung

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Foreword

This document (CEN/TS 16187:2011) has been prepared by Technical Committee CEN/TC 275 “Food analysis - Horizontal methods”, the secretariat of which is held by DIN.

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Annexes A, B and C are informative.

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1 Scope

This Technical Specification specifies a method for the determination of fumonisin B_1 (FB_1) and fumonisin B_2 (FB_2) in processed maize-containing foods for infants and young children by high performance liquid chromatography (HPLC) with immunoaffinity cleanup and fluorescence detection (FLD). This method has been validated in an interlaboratory study via the analysis of both naturally contaminated and spiked samples ranging from 112 µg/kg to 458 µg/kg for FB_1+FB_2, 89 µg/kg to 384 µg/kg for FB_1 and 22 µg/kg to 74 µg/kg for FB_2.

For further information on the validation see Clause 8 and Annex B.

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.

EN ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

3 Principle

Fumonisins are extracted from the sample with a mixture of citrate-phosphate buffer with methanol and acetonitrile. The filtered extract is diluted with water and applied to an immunoaffinity column containing antibodies specific to fumonisins. Fumonisins are eluted from the column with methanol and water and quantified by HPLC/FLD with pre-column derivatization with *o*-phthaldialdehyde (OPA) reagent.

4 Reagents

Use only reagents of recognized analytical grade and water complying with grade 1 of EN ISO 3696:1995, unless otherwise specified. Solvents shall be of quality for HPLC analysis, unless otherwise specified. Commercially available solutions with equivalent properties to those listed may be used.

WARNING — Dispose of waste solvents according to applicable environmental rules and regulations. Decontamination procedures for laboratory wastes have been reported by the International Agency for Research on Cancer (IARC), see [3].

4.1 Acetonitrile.

WARNING — Acetonitrile is hazardous and samples shall be blended using an explosion proof blender which is housed within a fume cupboard. After blending, samples shall be filtered inside a fume cupboard.

4.2 Methanol.

4.3 O-phthaldialdehyde (OPA).

4.4 Citric acid solution, substance concentration $c(C_6H_8O_7 \cdot H_20) = 0{,}1$ mol/l.

Dissolve 21,0 g of $C_6H_8O_7 \cdot H_20$ in water and dilute to 1 l.

4.5 Disodium hydrogen phosphate solution, $c(Na_2HPO_4) = 0{,}2$ mol/l.

Dissolve 28,4 g of Na_2HPO_4 in water and dilute to 1 l.