

Foodstuffs — Determination of aflatoxin B₁, and the sum of aflatoxins B₁, B₂, G₁ and G₂ in cereals, shell-fruits and derived products — High performance liquid chromatographic method with post column derivatization and immunoaffinity column clean up

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British Standard

ICS 67.060; 67.080.10

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 12, an inside back cover and a back cover.

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Produits alimentaires — Dosage de l'aflatoxine B₁ et de la somme des aflatoxines B₁, B₂, G₁ et G₂ dans les céréales, les fruits à coque et les produits dérivés — Méthode de chromatographie en phase liquide haute performance avec dérivation post-colonne et purification en colonne d'immuno-affinité

Lebensmittel — Bestimmung von Aflatoxin B₁ und der Summe von Aflatoxin B₁, B₂, G₁ und G₂ in Getreiden, Schalenfrüchten und verwandten Produkten — Hochleistungs-flüssigchromatographisches Verfahren mit Nachsäulenderivatisierung und Immunoaffinitätssäulen-Reinigung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 275 "Food analysis - Horizontal methods", 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of an identical text or by endorsement, at the latest by January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE Existing and developing legislation (national or EU) in this area will require a method with lower levels of detection. Such a method is currently being developed as an EU SMT project.

1 Scope

This European Standard specifies a method for the determination of aflatoxin contents of greater than 8 µg/kg.

The method has been successfully validated in an interlaboratory study according to ISO 5725:1986 on maize containing 24,5 µg/kg, peanut butter containing 8,4 µg/kg and raw peanuts containing 16 µg/kg of total aflatoxins.

Some laboratory experiences have shown that this method can be used with several types of cereals, oilseed products, shell-fruits, dried fruits and derived products, after in-house validation.

2 Normative reference(s)

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

3 Principle

The test sample is extracted with a mixture of methanol and water. The sample extract is filtered, diluted with water, and applied to an affinity column containing antibodies specific for aflatoxins B₁, B₂, G₁ and G₂. The aflatoxins are isolated, purified and concentrated on the column then removed from the antibodies with methanol. The aflatoxins are quantified by reverse-phase high performance liquid chromatography (HPLC) with fluorescence detection and postcolumn iodine derivatization.

WARNING The method described requires the use of solutions of aflatoxins. Aflatoxins are carcinogenic to humans. Attention is drawn to the statement made by the International Agency for Research on Cancer (WHO) [1], [2].

4 Reagents

4.1 General

During the analysis, unless other wise stated, use only reagents of recognized analytical grade and only water according to grade 1 of EN ISO 3696.

4.2 *Sodium chloride.*

4.3 *Iodine, crystalline.*

4.4 *Aflatoxin*, in crystal form or as a film in ampoules.

WARNING Protect the laboratory, where the analyses are done, adequately from daylight. This can be achieved effectively by using Ultraviolet (UV) absorbing foil on the windows in combination with subdued light (no direct sunlight) or curtains or blinds in combination with artificial light (fluorescent tubes are acceptable).

Protect aflatoxin containing solutions from light as much as possible (keep in the dark, use aluminium foil or amber-coloured glassware).

4.5 *Acetonitrile*, for HPLC.

4.6 *Methanol*, for analysis.

4.7 *Methanol*, for HPLC.