

**Piim ja piimapulber. Aflatoksiini M1
sisalduse määramine. Puhastamine
immunoafiinsuskromatograafia ja
määramine kõrgefektiivse
vedelikkromatograafia abil**

Milk and milk powder - Determination of aflatoxin M1
content - Clean-up by immunoaffinity
chromatography and determination by high-
performance liquid chromatography

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 14501:2007 sisaldab Euroopa standardi EN ISO 14501:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.11.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 14501:2007 consists of the English text of the European standard EN ISO 14501:2007.</p> <p>This document is endorsed on 22.11.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: See standard määrab kindlaks meetodi aflatoksiini M1 sisalduse määramiseks piimas ja piimapulbris.</p>	<p>Scope: This International Standard specifies a method for the determination of aflatoxin M1 content in milk and milk powder. The limit of detection is 0,08 µg/kg for whole milk powder, i.e. 0,008 µg/l for reconstituted liquid milk. The method is also applicable to low fat milk, skimmed milk, low fat milk powder, and skimmed milk powder.</p>
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Võtmesõnad: aflatoksiinid, keemiline analüüs, kõrgefektiivne vedelik kromatograafia, piim, piimapulber, piimatooted, põllumajandustooted, sisalduse määramine, toiduainetooted

English Version

Milk and milk powder - Determination of aflatoxin M1 content -
Clean-up by immunoaffinity chromatography and determination
by high-performance liquid chromatography (ISO 14501:2007)

Lait et lait en poudre - Détermination de la teneur en
aflatoxine M1 - Purification par chromatographie
d'immunoaffinité et détermination par chromatographie en
phase liquide à haute performance (ISO 14501:2007)

Milch und Milchpulver - Bestimmung des Gehalts an
Aflatoxin M1- Reinigung durch Immunoaffinitäts-
Chromatographie und Bestimmung mit Hochleistungs-
Flüssigchromatographie (ISO 14501:2007)

This European Standard was approved by CEN on 13 October 2007.

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN ISO 14501:2007) has been prepared by Technical Committee ISO/TC 34 "Agricultural food products" in collaboration with Technical Committee CEN/TC 302 "Milk and milk products - Methods of sampling and analysis" the secretariat of which is held by NEN.

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 April 2008, and conflicting national standards shall be withdrawn at the latest by April 2008.

This document supersedes EN ISO 14501:1998.

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

Endorsement notice

The text of ISO 14501:2007 has been approved by CEN as a EN ISO 14501:2007 without any modification.

**Milk and milk powder — Determination of
aflatoxin M₁ content — Clean-up by
immunoaffinity chromatography and
determination by high-performance liquid
chromatography**

*Lait et lait en poudre — Détermination de la teneur en aflatoxine M₁ —
Purification par chromatographie d'immunoaffinité et détermination par
chromatographie en phase liquide à haute performance*



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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

International Dairy Federation
Diamant Building • Boulevard Auguste Reyers 80 • B-1030 Brussels
Tel. + 32 2 733 98 88
Fax + 32 2 733 04 13
E-mail info@fil-idf.org
Web www.fil-idf.org

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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 14501|IDF 171 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF). It is being published jointly by ISO and IDF.

This second edition of ISO 14501|IDF 171 cancels and replaces the first edition (ISO 14501:1998), which has been technically revised.

Foreword

IDF (the International Dairy Federation) is a worldwide federation of the dairy sector with a National Committee in every member country. Every National Committee has the right to be represented on the IDF Standing Committees carrying out the technical work. IDF collaborates with ISO in the development of standard methods of analysis and sampling for milk and milk products.

Draft International Standards adopted by the Action Teams and Standing Committees are circulated to the National Committees for voting. Publication as an International Standard requires approval by at least 50 % of the IDF National Committees casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. IDF shall not be held responsible for identifying any or all such patent rights.

ISO 14501|IDF 171 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products* and the International Dairy Federation (IDF). It is being published jointly by ISO and IDF.

All work was carried out by the Joint IDF-ISO Action Team on *Organic contaminants* of the Standing Committee on *Analytical methods for additives and contaminants* under the aegis of its project leader, Mr. L. Sørensen (DK).

This edition of ISO 14501|IDF 171 cancels and replaces IDF 171:1995, which has been technically revised.

Milk and milk powder — Determination of aflatoxin M₁ content — Clean-up by immunoaffinity chromatography and determination by high-performance liquid chromatography

1 Scope

This International Standard specifies a method for the determination of aflatoxin M₁ content in milk and milk powder. The limit of detection is 0,08 µg/kg for whole milk powder, i.e. 0,008 µg/l for reconstituted liquid milk.

The method is also applicable to low fat milk, skimmed milk, low fat milk powder, and skimmed milk powder.

CAUTION

- 1 The method described in this protocol requires the use of solutions of aflatoxin M₁. Aflatoxins are carcinogenic to humans. Attention is drawn to the statement made by the International Agency for Research on Cancer [4], [5].
- 2 Protect the laboratory in which the analyses are performed adequately from daylight and keep aflatoxin standard solutions protected from light, e.g. by using aluminium foil.
- 3 The use of non-acid-washed glassware (e.g. tubes, vials, flasks, beakers, syringes) for aqueous aflatoxin solutions may cause loss of aflatoxin.

Moreover, brand new laboratory glassware, before coming into contact with aqueous solutions of aflatoxin, should be soaked in dilute acid (e.g. sulfuric acid, 2 mol/l) for several hours, then rinsed well with distilled water to remove all traces of acid (check to ensure pH is in the range 6 to 8).

- 4 Use decontamination procedures for laboratory wastes such as solid compounds, solutions in organic solvents, aqueous solutions and spills, and for glassware coming into contact with carcinogenic materials. Suitable decontamination procedures have been developed and validated by the International Agency for Research on Cancer [4], [5].

2 Terms and definitions

For the purposes of this document the following terms and definitions apply.

2.1

aflatoxin M₁ content

concentration or mass fraction of substances determined by the procedure specified in this International Standard.

NOTE The aflatoxin M₁ concentration is expressed in micrograms per litre and the mass fraction in micrograms per kilogram.

3 Principle

Aflatoxin M₁ is extracted by passing the test portion through an immunoaffinity column that contains specific antibodies bound onto a solid support material.