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Milk and milk products — Determination of the minimal inhibitory concentration (MIC) of antibiotics applicable to bifidobacteria and non-enterococcal lactic acid bacteria (LAB)

Lait et produits laitiers — Détermination de la concentration minimale inhibitrice (CMI) d'antibiotiques applicable aux bifidobacteria et bactéries lactiques non-entérocoques

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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 10932|IDF 223 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.

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Foreword

IDF (the International Dairy Federation) is a non-profit organization representing the dairy sector worldwide. IDF membership comprises National Committees in every member country as well as regional dairy associations having signed a formal agreement on cooperation with IDF. All members of IDF have 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.

The main task of Standing Committees is to prepare International Standards. Draft International Standards adopted by the Standing Committees are circulated to the National Committees for endorsement prior to publication as an International Standard. Publication as an International Standard requires approval by at least 50 % of IDF National Committees casting a vote.

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ISO 10932 | IDF 223 was prepared by the International Dairy Federation (IDF) and Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*. It is being published jointly by IDF and ISO.

All work was carried out by a Joint ISO-IDF Project Group on *Minimal inhibitory concentration (MIC) of antibiotics* of the Standing Committee on *Analytical methods for dairy microorganisms* under the aegis of its project leader, Mr. M. Danielsen (DK).

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Introduction

There are several reports on minimal inhibitory concentration (MIC) determination of lactic acid bacteria according to various methods. However, the MIC value obtained depends on the determination used and the strain cultivation technique. For example, MIC determined by different quantitative methods are not always equivalent. Also some media components are antagonistic to certain antibiotics.

Consequently, a standardized MIC determination which employs a suitable growth medium having little or no antagonistic effects towards the antibiotics studied is necessary.

Two EU projects (PROSAFE and ACE-ART) were launched to tackle these issues, and propose appropriate media and method to measure MIC. This International Standard is based on the SOP (standard operating procedure) proposed by ACE-ART.

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WARNING — Antibiotics are substances that may be hazardous. Necessary precautions should be taken to avoid contact with these substances. In particular, kanamycin may cause harm to the unborn child (risk phrase R61) and chloramphenicol may cause cancer (risk phrase R45).

1 Scope

This International Standard specifies a method for determining the minimal inhibitory concentration (MIC) of a series of antibiotics applicable to bifidobacteria and non-enterococcal lactic acid bacteria (LAB).

NOTE Unlike the disk diffusion method, which is semi-quantitative, the frequently used broth microdilution method gives quantitative MICs of the test organism in a dilution series of the antibiotics. The lowest concentration of an antibiotic that prevents visible growth of a test organism is considered to be the MIC.

This International Standard recommends the broth microdilution method as the standard method.

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 6887-5, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 5: Specific rules for the preparation of milk and milk products*

ISO 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations*

ISO/TS 11133-1, *Microbiology of food and animal feeding stuffs — Guidelines on preparation and production of culture media — Part 1: General guidelines on quality assurance for the preparation of culture media in the laboratory*

ISO/TS 11133-2, *Microbiology of food and animal feeding stuffs — Guidelines on preparation and production of culture media — Part 2: Practical guidelines on performance testing of culture media*

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