ICS 07.080
CCS A 40

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33682-2025

Replacing GB/T 33682-2017

General microorganism identification method with matrix-assisted laser desorption/ionization time of flight mass spectrometry

基质辅助激光解吸电离飞行时间质谱鉴别微生物方法通则

Issued on: May 30, 2025 **Implemented on: September 1, 2025**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 33682-2017 "General rules for identification of microorganisms by matrix-assisted laser desorption ionization time-of-flight mass spectrometry" and Compared with GB/T 33682-2017, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Added requirements for pre-treatment methods for different strains (see 8.2);

- Added instrument setting condition requirements (see 8.4.1);

- Added "quality control" requirements (see 8.6);

- Changed the interpretation criteria of "result interpretation" (see 8.8, 8.7 of the 2017 edition);

- Changed the reporting requirements for "Results Report" (Chapter 9, Chapter 9 of the 2017 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed and coordinated by the National Technical Committee for Biochemical Testing Standardization (SAC/TC387).

This document was drafted by: Hebei Provincial Food Inspection Institute, China Testing Technology Research Institute, Heilongjiang Provincial Intellectual Property Protection Center, Tsinghua University University, Guangzhou Huaxin Testing Technology Co., Ltd., Suzhou Shipu Testing Technology Co., Ltd., Henan University, Beijing Institute of Food

Science, Nanjing University of Finance and Economics, Hebei Medical University, Beijing Technology and Business University, Zhejiang University of Technology, China Institute of Inspection and Quarantine, Lanzhou Baiyuan Gene Technology Ltd.

The main drafters of this document are: Zhang Yan, Zhou Wei, Wang Yi, Zhou Lihua, Peng Liping, Li Yongbo, Kang Wenyi, Sun Yong, Lv Pin, Wendi, Fan Sufang, Tang Xiaozhi, Feng Xiao, Zhang Yalun, Wang Yanbo, Zhou Xuxia, Zhang Rui, Che Tuanjie, Chen Chen, Liao Huayong, Dai Dan, Wang Hui, Liu Shuai, Ren Xiaoyan, Niu Xiangtao, Zou Yan and Zheng Xiaoling.

The previous versions of this document and the documents it replaces are as follows.

- First published in 2017 as GB/T 33682-2017;

- This is the first revision.

Matrix-assisted laser desorption ionization time-of-flight mass spectrometry General principles for methods of identification of microorganisms

1 Scope

This document specifies the general method for identification of microorganisms by matrix-assisted laser desorption ionization time-of-flight mass spectrometry.

This document applies to the matrix-assisted laser desorption ionization time-of-flight mass spectrometry identification of microbial species.

2 Normative references

GB/T 6682

GB 19489

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

The isolated and purified single colony is directly applied to the target plate, and after drying, the matrix is added and mixed. The microbial soluble protein and the matrix form After forming co-crystals, mass spectrometry fingerprints of protein molecules with different mass-to-charge ratios were obtained through a vacuum time-of-flight tube.

4 Abbreviations

The following abbreviations apply to this document.

BTS. Bacteria Detection Standard Sample.

MALDI-TOFMS. matrix-assisted laser desorption ionization time-of-flight mass spectrometry.

MALDI-TOF-TOFMS. matrix-assisted laser desorption ionization time-of-flight tandem mass spectrometry. MSP. main spectrum plot.

5 Principle

Common microorganisms are composed of special proteins that are different from other species, and therefore have unique protein fingerprints, which are determined by species.

It is determined by the genetic characteristics and is less affected by external environmental conditions.

Samples (from clinical samples such as sputum, blood, body fluids, swabs, and food, cosmetics, medicines, and the environment, etc.) are properly processed and cultured in solid After culturing and isolating a single colony on the matrix, the sample was directly spotted onto the target plate and placed into the matrix-assisted laser desorption ionization time-of-flight mass spectrometer.

Ionization is separated according to the mass/charge (m/z) ratio, and the collected data is compared with the microbial fingerprint library for identification.