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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Nanotechnologies - Determination of silver nanoparticles
potency by release of muramic acid from Staphylococcus
aureus**

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Table of Contents

Introduction	
1 Scope	1
2 Normative reference documents	1
3 Terms and Definitions	1

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is equivalent to ISO /T S16550.2014 "Nanotechnology uses muramic acid released by *Staphylococcus aureus* to detect silver nanoparticles."

"Efficacy of Particles", the document type was adjusted from ISO technical specifications to my country's guiding technical documents.

This document adds a chapter "Normative References".

This document has made the following minimal editorial changes.

---Add Chapter 7 "The standard deviation of three parallel samples is ± 0.0128 " to Table 2 of that chapter.

Introduction

The antibacterial activity of silver nanoparticles (AgNP) has been increasingly used in the biomedical field and many consumer products, such as medical devices.

Mechanical coating materials, orthopedic or dental implant materials, local excipients for wound repair, textiles and even washing machines, etc. [9]. The company produces a variety of tools

Silver nanoparticles with different physical properties have been used as antibacterial agents, but little attention has been paid to their side effects. In addition, the biological effects of nanoparticles in different environments

Availability may increase[2][3], resulting in impacts and risks to soil beneficial microorganisms, plants, animals and humans. Therefore, silver nanoparticles

The potency of granules should be assessed and classified based on their ultimate

biological activity.

This document does not address the evaluation of silver nanomaterial properties.

Nanotechnology harnesses *Staphylococcus aureus* to release

Muramic acid detects the efficacy of silver nanoparticles

1 Scope

This paper describes a method using gas chromatography-mass spectrometry (GC-MS) to quantitatively evaluate the effects of silver nanoparticles on *Staphylococcus aureus* cells.

Methods for wall degradation and muramic acid release efficacy.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

The property of a compound or substance to kill bacteria (bactericidal) or inhibit bacterial growth (bacteriostatic).

3.2

A physical technique that can be used to detect the particle size distribution of small particles in suspension or polymers in solution.

3.3

gas chromatography-mass spectrometry gaschromatography-massspectrometry; GC-MS

A technique that combines gas chromatography and mass spectrometry for qualitative and quantitative analysis of volatile compounds in samples to be tested (see Appendix A).

3.4

Grampositivebacteria Grampositivebacteria

In Gram staining, bacteria that can be stained/not destained by organic solvents.

3.5

internal standardinternalstandard

A compound of known concentration added to a sample to aid in the qualitative identification and/or quantitative determination of the sample's components (see Appendix

B).

[Source. ISO 20752.2014,3.2]

3.6

Limit of detection limitof detection; LOD

The analyte in the test sample can be reliably detected but is not required to be quantified, as demonstrated by collaborative testing or other appropriate verification.

Minimum amount or concentration.

[Source. ISO 8196-1.2009,3.4.3]