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

GB/T 44428-2024

**Determination of cannabidiol and tetrahydrocannabinol in
cosmetics - Liquid chromatography tandem mass spectrometry**

化妆品中大麻二酚和四氢大麻酚的测定 液相色谱-串联质谱法

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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 is required. 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 by China Light Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Flavors and Fragrances and Cosmetics (SAC/TC 257). This document was drafted by: Shanghai Quality Supervision and Inspection Technology Research Institute, Shanghai Food and Drug Inspection Institute, Shanghai Customs Animal and Plant With Food Inspection and Quarantine Technical Center, Shanghai Spice Research Institute Co., Ltd., and Tsinghua University. The main drafters of this document are. Xue Feng, Yang Jinjing, Yin Jie, Zheng Rong, Chen Dandan, Niu Yunwei, Chen Zhangting, Yang Bin, Chen Yao, Yu Yijing, Peng Xingsheng, Shi Lingling, Yang Zhenyu, Gu Yuxiang, Wang Yi, Zhang Yan, and Wang Zheng.

The substances tested in this document are prohibited raw materials as stipulated in my country's "Technical Specifications for Safety of Cosmetics (2015 Edition)". Prohibited raw

materials refer to substances that cannot be used as cosmetic raw materials. The "Cosmetic Safety Technical Specifications (2015 Edition)" stipulates. When it is technically impossible to avoid banned substances from being introduced into cosmetics as impurities, the national limit should be followed; if no limit is set, Conduct safety risk assessment to ensure that no harm to human health is caused under normal, reasonable and foreseeable conditions of use. At present, my country has not yet stipulated the limit values for these substances. The formulation of this document only provides detection methods for the determination of these substances in cosmetics. Determination of cannabidiol and tetrahydrocannabinol in cosmetics Liquid chromatography-tandem mass spectrometry

WARNING - Personnel using this document should have practical experience in formal laboratory work. This document does not purport to address all possible safety issues. The user is responsible for taking appropriate safety and health measures and ensuring that the conditions are in compliance with relevant national regulations.

1 Scope

GB/T 44428-2024 gives the Chinese LC-MS/MS method for determining cannabidiol and tetrahydrocannabinol in cosmetics. It exists because of a regulatory divergence that matters commercially: CBD-containing cosmetics are marketed heavily in other countries and are prohibited in China, so imported and cross-border products have to be screened, and the analysis must distinguish CBD from THC and quantify both at trace level in matrices, creams, lotions, oils, that are among the most difficult in cosmetic analysis. The standard sets the principle, the reagents and apparatus, the sample preparation and extraction with the clean-up appropriate to each matrix type, the chromatographic separation that resolves the cannabinoids and their isomers, the mass spectrometric conditions with the transitions monitored for quantification and confirmation, the calibration and matrix matching, the limits of detection and quantification, the calculation, the precision and the test report. It took effect on 23 August 2024.

This document describes the principles, reagents and materials for the determination of cannabidiol and tetrahydrocannabinol in cosmetics by liquid chromatography-tandem mass spectrometry. The contents include materials, instruments and equipment, sample preparation and test steps, test data processing, recovery rate and precision, etc. This document is applicable to the determination of cannabidiol and tetrahydrocannabinol in cosmetics such as aqueous solutions, creams, lotions, gels, etc. This document does not apply to cleansing cosmetics and all-oil-based cosmetics. The detection limits of the methods for cannabidiol and tetrahydrocannabinol in this document are both 5 µg/kg, and the quantification limits are both 10 µg/kg.

2 Normative references

The contents of the following documents constitute the essential clauses of this document

through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4 Principle

The sample was vortexed with methanol, ultrasonically extracted, and centrifuged to obtain the target test solution. Chromatography tandem mass spectrometer, using liquid chromatography separation, mass spectrometry detector detection, retention time and relative ion pair abundance of mass spectrometry qualitative analysis, internal Standard quantitative method.

5 Reagents and Materials

Unless otherwise specified, only chromatographic grade reagents were used.

5.1 Water, GB/T 6682, Grade 1.

5.2 Ammonium formate.

5.3 Standards. Cannabidiol (CBD) and tetrahydrocannabinol (THC) with purity greater than 99%; tetrahydrocannabinol D3 (THCD3) Purity greater than 98%, or a standard substance certified by the state and awarded a standard substance certificate. Cannabidiol, tetrahydrocannabinol and tetrahydrocannabinol The English name, CAS number, molecular formula, relative molecular mass and chemical structure of D3 are shown in Table A.1 in Appendix A.

5.5 Formic acid.