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Quantitative nuclear magnetic resonance spectroscopy — Purity determination of organic compounds used for foods and food products — General requirements for ^{1}H NMR internal standard method

Spectroscopie par résonance magnétique nucléaire quantitative — Détermination de la pureté des composés organiques utilisés dans les aliments et les produits alimentaires — Exigences générales pour la méthode de l'étalon interne par RMN ^{1}H

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Foreword

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This document was prepared by Technical Committee ISO/TC 34, *Food products*.

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Introduction

Reliable quantification of food components is important for food safety and can be used as a measurement tool for food authenticity. Presently, chromatography such as gas chromatography (GC) and liquid chromatography (LC) is used in the majority of regulatory work associated with foods and food products. To obtain reliable quantification results with these methods, the use of certified reference materials (CRMs) is required, for which metrological traceability of the certified value, as measurement standards, is essential. However, obtaining such CRMs to fulfil these requirements is almost impossible in many cases as conventional methods that can establish metrological traceability, such as the mass balance, have limited applications. Therefore, the establishment of a simple, rapid, widely applicable and reliable purity quantification method, with a focus on the establishment of metrological traceability, for the characterization of measurement standards for food analyses is an essential. Quantitative nuclear magnetic resonance (qNMR) spectroscopy has been recognized as a quick and simple characterization method. The method is also recognized as metrologically traceable, and uses the purity from a CRM to determine the purity of other analytes. When a certified value of a CRM, whose value is stated as metrological traceable to the International System of Units (SI), is used as a measurement standard for qNMR, the determined purity value of the sample by qNMR can also be traceable to the SI through the CRM. qNMR, therefore, has the potential to provide the SI traceability to measurement standards relevant to food components.[10][17][36]

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