NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国国家标准

GB 5009.94–2012

National Standard of Food Safety

Determination of the rare earth element in plant food

食品安全国家标准

植物性食品中稀土元素的测定

Issued on May 17, 2012 **Implemented on November 17, 2012**

Issued by Ministry of Health of the People's Republic of China

Contents

Foreword

This Standard will replace GB/T 5009.94-2003 *Determination of rare earths in vegetable foods, meanwhile*, replace GB/T 22290-2008 *Determination of rare earth elements in tea by inductively coupled plasma mass spectrometry*, GB/T 23199-2008 *Determination of rare earth elements in tea—Inductive coupled plasma atomic emission spectrometer and inductive coupled plasma mass spectrometer*, GB/T 7630-1987 *The tribromoarsenazo photometric method for the determination of rare earth oxide content in rice and wheat*.

Comparison with GB/T 5009.94-2003, main changes of this Standard are as follows:

— Changed the title from *Determination of rare earths in vegetable foods* to *Determination of the rare earth element in plant food*;

— Added inductively coupled plasma mass spectrometry methods;

— Deleted three wavelength spectrophotometry.

National Standard of Food Safety

Determination of the rare earth element in plant food

1 Scope

This standard specifies the method of determining the rare earth element in the plant food using inductively coupled plasma mass spectrometer.

This standard applies to the determination of scandium (Sc), yttrium (Y), lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu) in cereal grains, legumes, vegetables, fruits, tea and other plant food.

2 Principle

Sample is digested into sample solution, which is sent to ICP or plasma torch tube after atomization by the carrier gas, and converts into positively charged ions after evaporation, dissociation, atomization, ionization and other processes and enters into mass spectrometer through the ion acquisition system, and separated by mass spectrometer according to the mass-to-charge ratio. For a given mass-to-charge ratio, the signal intensity of mass spectrum is proportional to the number of ions entering the mass spectrometer, namely, the sample concentration is proportional to the mass spectrum signal intensity. Determine the element concentration in the sample solution by determining the mass spectrum signal intensity.

3 Reagents and materials

3.1 Reagents

Notes: Unless otherwise stated, the reagent used is guarantee reagent and the water is grade Ⅰ specified in GB/T 6682.

3.1.1 Nitric acid (HNO_3).

3.1.2 Argon (Ar): High-purity argon (> 99.999%) or liquid argon.

3.2 Preparation of reagent

Nitric acid solution (5+95): Diluted 50mL nitric acid solution to 1000mL with water.

3.3 Standard substance

完整版本请在线下单

或咨询：

TEL: 400-678-1309

QQ: 19315219

Email：info@lancarver.com

http://www.lancarver.com

线下付款方式：

1. 对公账户：

单位名称：北京文心雕语翻译有限公司

开 户 行：中国工商银行北京清河镇支行

账　　号：0200 1486 0900 0006 131

2. 支付宝账户：info@lancarver.com

注: 付款成功后，请预留电邮，完整版本将在一个工作日内通过电子 PDF 或 Word 形式发送至您的预留邮箱，如需索取发票，下单成功后的三个工作日内安排开具并寄出，预祝合作愉快！