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Determination of pentosan content in plant-derived products - Gas chromatography/mass spectrometry method

植物源产品中戊聚糖含量的测定 气质联用法

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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.

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 is proposed and coordinated by the China National Institute of Standardization.

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Determination of Pentosan Content in Products of Plant Origin GC-MS Warning---The

derivatization reagents used in the experiment contain toxic substances. The sample derivatization process should be carried out in a fume hood.

Please wear protective equipment and avoid contact with skin and clothing.

1 Scope

This document describes a method for the determination of pentosan content in products of plant origin by gas chromatography-mass spectrometry.

This document applies to pentosans in wheat and bran, sorghum, millet, rice, soybeans, tea, sugar cane, pineapple peel, coconut milk, reed root, and edible fungi.

Determination of content. Other plant-derived products shall be implemented in accordance with the same regulations.

2 Normative references

GB/T 6682

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Pentosan

A condensation product of pentose (five-carbon sugar).

Note. The pentosan content in this document is calculated as the sum of arabinose and xylose.

4 Principle

Plant-derived products use water and saturated barium hydroxide solution as extractants to extract water-soluble pentosans or water-insoluble pentosans, respectively.

The product was hydrolyzed by xylanase to obtain arabinose and xylose as the main hydrolysis products. Hydroxylamine hydrochloride, pyridine and acetic anhydride were used as derivatization reagents.

The arabinose and xylose derivatives were obtained by solid phase extraction column purification and quantitative determination by gas chromatography-mass spectrometry.

The sum of the arabinose and xylose contents generated by the hydrolysis of sugars and water-insoluble pentosans was converted into the pentosan content in the plant-based product.

5 Reagents and Materials

Unless otherwise stated, all reagents used in this method were of analytical grade.

5.1 Reagents

5.1.1 Barium hydroxide [Ba(OH)2, CAS No.. 17194-00-2].