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

GB/T 18525.12-2026

Replacing GB/T 18526.2-2001

**Irradiation processing practice for agricultural products - Part
12: Pollen**

农产品辐照工艺 第12部分：花粉

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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 Part 12 of GB/T 18525 "Irradiation Processes for Agricultural Products". GB/T 18525 has already published the following parts.

1. Legumes and their products;

2. Cereals and their products;

---Irradiation process for insect control and mold prevention in dried shiitake mushrooms (GB/T 18525.5);

6. Dehydrated Vegetables;

7. Spices and Seasonings;

8. Cooked Meat Products;

11. Dried Longan;

12. Pollen. This document replaces GB/T 18526.2-2001 "Pollen Irradiation Sterilization Process". Compared with GB/T 18526.2-2001, the only changes are structural adjustments. Aside from editorial changes, the main technical changes are as follows:

---The scope of application has been changed (see Chapter 1, Chapter 1 of the 2001 edition);

---Added the terms "bee pollen," "pine pollen," "process dosage," "dosage non-uniformity," and "dosage distribution test" and their definitions (see 3.2). 3.3, 3.6~3.8);

---The requirements for irradiation devices have been changed (see Chapter 4, Chapter 5 in the 2001 edition);

---The requirements for pre-irradiation moisture content and total bacterial count have been removed (see sections

4 Irradiation device

4.1 Available ionizing radiation sources include gamma rays produced by ^{60}Co or ^{137}Cs radionuclides, and electron accelerators producing energies not exceeding [a certain value]. The electron beam or energy limit of 10MeV complies with the relevant national regulations for X-rays.

4.2 The site selection, design, and construction of irradiation facilities shall comply with the relevant provisions of GB/T 17568 and GB/T 25306, and meet the requirements for food irradiation processing. Hygiene requirements.

4.3 Before product irradiation, the installation and operational qualification of the irradiation device should be completed. This should be in accordance with the requirements of GB 16334, GB/T 16841, and national standards. Relevant regulations are used to standardize processes and verify capabilities, and to create documented evidence.

5.1 Product Quality and Packaging

5.1.1 Microbial Control Production enterprises should control pollen raw materials and environmental hygiene conditions to prevent secondary microbial contamination.

5.1.2 Sensory Requirements It should have the characteristic color, taste, odor and state of pollen, as specified in GB/T 30359 and GH/T 1030.

5.1.3 Physicochemical Indicators It should comply with the provisions of GB/T 30359 and GH/T 1030.

5.1.4 Packaging The inner packaging should be made of food-grade, radiation-resistant, and protective materials, and the irradiation of the packaging materials should not affect the quality of the pollen. The types of outer packaging... The specifications and dimensions should be suitable for the irradiation sterilization process and the requirements for storage and transportation.

5.2 Process Determination

5.2.1 The irradiation process dose should be determined based on the pollen type, water content, and different microbial loads. The irradiation process dose should be determined according to the set parameters. Irradiation should not affect the edible quality of the pollen, and the sensory characteristics of the pollen after irradiation should not be significantly different from those before irradiation.

5.2.2 The minimum effective dose should be determined based on the pre-irradiation microbial load and quality control minimization objectives. Minimum effective dose See Appendix A for the setup instructions.

5.2.3 When the moisture content of bee pollen is $\leq 10\text{g}/100\text{g}$, the recommended maximum tolerable dose is 10.0kGy ; when the moisture content of pine pollen is $\leq 8\text{g}/100\text{g}$, the recommended maximum tolerated dose is 10.0kGy .

5.2.4 The process dose for product irradiation should be greater than the minimum effective dose and less than the maximum tolerable dose.

5.2.5 The loading mode should be determined based on the type of pollen, packaging specifications, irradiation device, and irradiation container, and dose distribution measurements should be conducted. The experiment was conducted to obtain dose non-uniformity, select the location of the monitoring dosimeter, and develop irradiation process specification documents.

6 Irradiation process

6.1 Irradiation Operation The product is loaded according to the process specification documents, the equipment operating parameters are set, irradiation is carried out, and the irradiation process is monitored and recorded.

6.2 Dose Monitoring According to the process specifications, deploy monitoring dosimeters, and perform dose measurements and record them. Dose measurements for gamma and electron beam irradiation devices should be performed separately. Do not follow the provisions of GB 16334 and GB/T 16841. The selection and calibration of the dosimetry system should be in accordance with the provisions of GB/T 16640. The decision will be made.

6.3 Interruption Assessment In the event of a processing interruption, the impact of the interruption on the absorbed dose of the product should be assessed, and the subsequent processing procedures should be documented.

7 Post-irradiation management

7.1 Storage Irradiated and unirradiated pollen should be stored separately. The storage area should be cool, dry, clean, and hygienic, protected from high temperatures, wind, rain, and contamination. Source of contamination.

7.2 Release The product can only be released after the monitoring results of the absorbed dose of the product confirm that the dose requirements of the irradiation process are met and there are no other abnormalities in the irradiation process. When there are cases where the dosage does not meet the process requirements or other non-conforming situations occur, the product should be treated as a non-conforming product.

7.3 Transportation During pollen transportation, high temperatures should be avoided, and it should be protected from direct sunlight, rain, and moisture. It should not be packaged with toxic, harmful, odorous, or easily contaminated items. Mixed transport.

8. Record and File Management All documents and records should be properly kept and available for inspection within the product's shelf life, and should be retained for at least 2 years.

12 Pollen

1. Scope This document specifies the irradiation equipment, pre-irradiation requirements, irradiation process, post-irradiation management, record keeping, and document management for pollen irradiation sterilization. Require. This document applies to the irradiation sterilization of bee pollen and pine pollen products intended to extend their shelf life.