Onion Extract Specification Sheet

Product Definition

Onion Extract is a natural plant extract prepared through standardized processes including crushing, extraction, purification, and drying from the fresh bulbs of Allium cepa L., a plant belonging to the genus Allium in the Liliaceae family. It is rich in active ingredients such as total flavonoids, quercetin, and sulfur-containing compounds.

I. Basic Product Information

- **Product Name**: Onion Extract
- **English Name**: Onion Extract
- **CAS No.**: 84929-24-0 (for total flavonoids), 117-39-5 (for quercetin)
- **Molecular Formula**: $C_{15}H_{10}O_7$ (for quercetin), $C_6H_{10}O_5$ (for polysaccharide repeating unit, if applicable)
- **Molecular Weight**: 302.24 (for quercetin), 360.3 (for polysaccharide monomer, if applicable)
- **Plant Source**: Fresh bulbs of Allium cepa L., a plant belonging to the genus Allium in the Liliaceae family
- **Extraction Part**: Fresh bulbs
- **Appearance and Properties**: A fine powder ranging from light yellow to yellowish-brown, free from visible impurities, with a characteristic fresh onion aroma and no off-flavors.

II. Technical Specifications

- Core Indicators
  - **Total Flavonoid Content**: ⩾ 1.0% - 3.0% (calculated as quercetin, on a dry basis, determined by UV spectrophotometry). Graded as follows: Food Grade ⩾ 1.0%, Health Product Grade ⩾ 2.0%, Cosmetic Grade ⩾ 3.0%.
  - **Quercetin Content**: ⩾ 0.03% - 0.5% (on a dry basis, determined by high-performance liquid chromatography). Graded as follows: Food Grade ⩾ 0.03%, Health Product Grade ⩾ 0.3%, Cosmetic Grade ⩾ 0.5%.
  - **Sulfur-Containing Compound Content**: ⩾ 0.8% - 2.0% (calculated as allicin, on a dry basis, determined by titration method). Graded as follows: Food Grade ⩾ 0.8%, Health Product Grade ⩾ 1.5%, Cosmetic Grade ⩾ 2.0%.
  - **Moisture Content**: ⩽ 5.0% - 8.0% (determined by drying method). Graded as follows: Food Grade ⩽ 8.0%, Health Product Grade ⩽ 6.0%, Cosmetic Grade ⩽ 5.0%.
  - **Ash Content**: ⩽ 3.0% - 5.0% (determined by ignition residue method). Graded as follows: Food Grade ⩽ 5.0%, Health Product Grade ⩽ 4.0%, Cosmetic Grade ⩽ 3.0%.
  - **Acid-Insoluble Ash Content**: ⩽ 1.0% (determined by ignition residue method).
- Heavy Metal Indicators:
  - **Total Heavy Metals**: ⩽ 10.0 mg/kg

- **Lead (Pb)**: ⩽ 0.1 - 0.5 mg/kg. Graded as follows: Food Grade ⩽ 0.5 mg/kg, Health Product Grade ⩽ 0.3 mg/kg, Cosmetic Grade ⩽ 0.1 mg/kg.
- **Arsenic (As)**: ⩽ 0.1 - 0.3 mg/kg. Graded as follows: Food Grade ⩽ 0.3 mg/kg, Health Product Grade ⩽ 0.2 mg/kg, Cosmetic Grade ⩽ 0.1 mg/kg.
- **Mercury (Hg)**: ⩽ 0.01 - 0.1 mg/kg. Graded as follows: Food Grade ⩽ 0.1 mg/kg, Health Product Grade ⩽ 0.05 mg/kg, Cosmetic Grade ⩽ 0.01 mg/kg.
- **Cadmium (Cd)**: ⩽ 0.01 - 0.1 mg/kg. Graded as follows: Food Grade ⩽ 0.1 mg/kg, Health Product Grade ⩽ 0.05 mg/kg, Cosmetic Grade ⩽ 0.01 mg/kg.

● **Pesticide Residue and Microbial Limits:**

- **Pesticide Residues**: Compliant with the requirements for plant extracts specified in the *Chinese Pharmacopoeia* (2025 Edition). The detection method refers to GB/T 23204.
- **Total Plate Count**: ⩽ 1000 - 10000 CFU/g. Graded as follows: Food Grade ⩽ 10000 CFU/g, Health Product Grade ⩽ 5000 CFU/g, Cosmetic Grade ⩽ 1000 CFU/g.
- **Mold and Yeast Count**: ⩽ 10 - 100 CFU/g. Graded as follows: Food Grade ⩽ 100 CFU/g, Health Product Grade ⩽ 50 CFU/g, Cosmetic Grade ⩽ 10 CFU/g.
- **Coliforms**: Food Grade ⩽ 30 MPN/100g, Health Product Grade ⩽ 10 MPN/100g, Cosmetic Grade: Not detected.
- **Salmonella**: Not detected.
- **Staphylococcus aureus**: Not detected.

● **Other Indicators:**

- **Particle Size**: Passes through an 80-mesh sieve ⩾ 95% (determined by sieving method).
- **Solubility**: Freely soluble in water, partially soluble in ethanol, and insoluble in petroleum ether and ether. Verified by visual inspection combined with solubility determination.
- **Solvent Residue**: Ethanol residue ⩽ 500 ppm (determined by gas chromatography).

III. Application Scope

- **Functional Foods**: Can be used as a raw material for antioxidant and gut-regulating dietary supplements, compressed tablets, solid beverages, functional drinks, etc.
- **Health Products**: Suitable as a raw material for health products approved for their antioxidant and immunity-enhancing functions.
- **Cosmetics**: Used as a raw material for antioxidant, anti-inflammatory, soothing, and whitening skin care products such as serums, creams, masks, and toners.
- **Food Additives**: Can be used as a flavor enhancer and antioxidant in condiments, pickles, convenience foods, etc.

IV. Packaging Specifications

Inner packaging: Food-grade aluminum foil bags; Outer packaging: Paper drums. Conventional specification: 25 kg/drum. Customized specifications such as 1 kg/bag, 5 kg/bag, 10 kg/bag are available upon customer request.

V. Shelf Life

24 months (under sealed original packaging conditions).

VI. Storage Conditions

Sealed and stored in a cool, dry, and well-ventilated place with temperature controlled below 30℃ and relative humidity ⩽ 60%. Avoid direct sunlight, high temperatures, and high humidity. Keep away from oxidants and odorous substances.

VII. Transportation Method

Transported at room temperature, avoiding rain, exposure to sunlight, heavy pressure, and severe collision. Compliant with the transportation regulations for general chemicals; it is not a dangerous good.

Remarks

Onion Extract complies with the following standards and specifications:

- China: ChP/GB
- International: WHO
- United States: USP/cGMP/FCC
- European Union: EP/EU FC
- Japan: JP FC

Onion Extract Nutritional Component Table

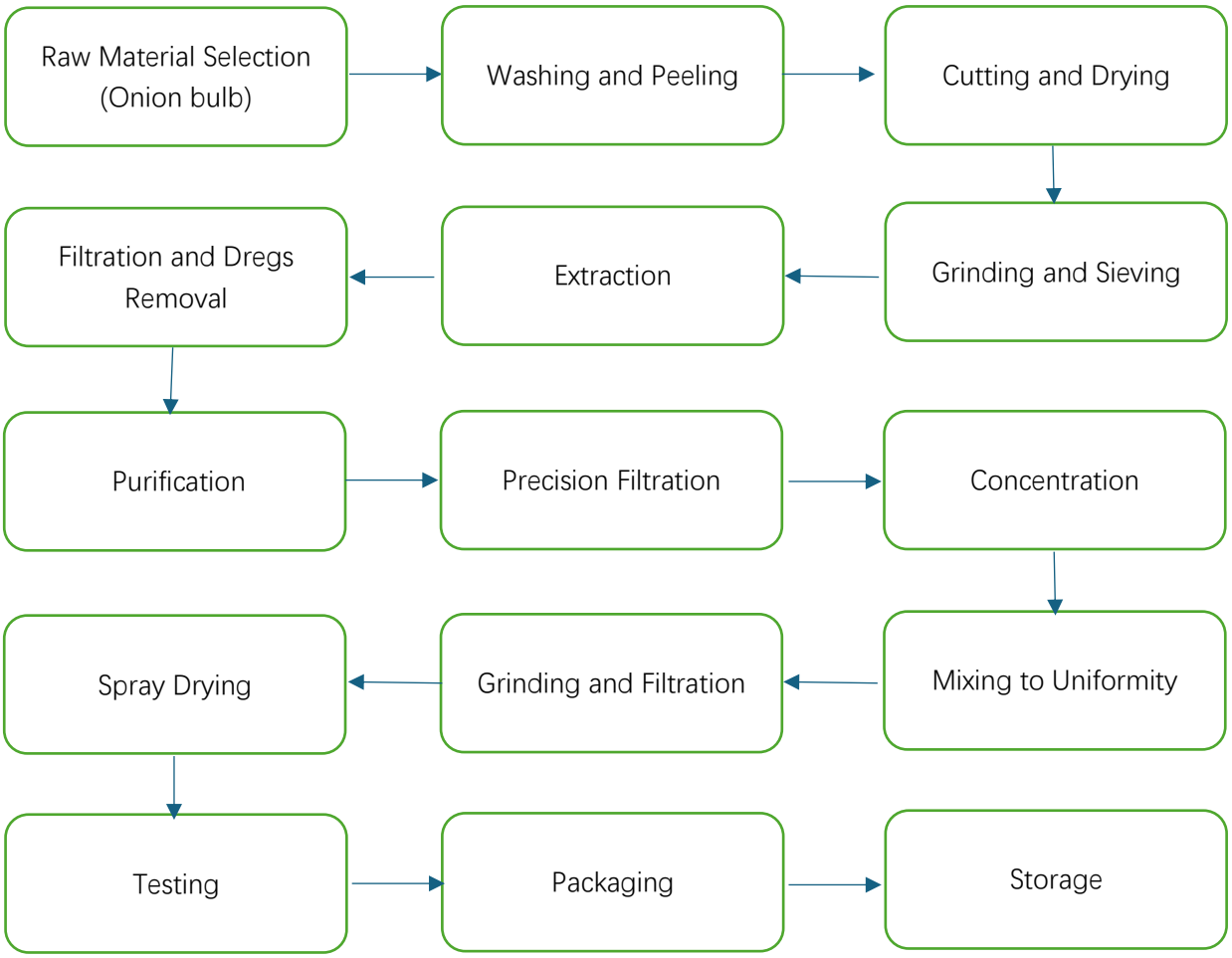
Reference Basis: Per 100 grams (g) (for the food-grade conventional product with total flavonoids ⩾ 1.0% and sulfur-containing compounds ⩾ 0.8%).

Nutritional Component	Content	NRV %
Energy	⩽ 2200 kJ	⩽ 26%
Protein	8.0 - 12.0 g	13% - 20%
Fat	⩽ 1.0 g	⩽ 2%
Carbohydrate	55.0 - 65.0 g	18% - 22%
Dietary Fiber	15.0 - 20.0 g	50% - 67%
Sodium	⩽ 30 mg	⩽ 2%
Total Flavonoids (Functional Component)	⩾ 1.0 g	—
Quercetin (Functional Component)	⩾ 0.03 g	—
Sulfur-Containing Compounds (Functional Component)	⩾ 0.8 g	—
Ash	⩽ 5.0 g	—
Moisture	⩽ 8.0 g	—

Remarks

- This nutritional component table is compiled based on the test data of the food-grade conventional Onion Extract. For different specifications (health product grade, cosmetic grade), the content of functional components is adjusted according to the grade standards, and the content of basic nutrients varies slightly.
- The "—" in the table indicates that the functional component has no national specified nutrient reference value.
- The content of total flavonoids and sulfur-containing compounds varies slightly with the origin of raw materials, planting season, and extraction process, with a fluctuation range of ⩽ 10%.
- The mineral content (potassium, calcium, iron, etc.) can be supplemented and added to the table based on customer requirements through additional testing.

Onion Extract Production Process Flow Chart



Key Process Control Points Description

- **Raw Material Selection**: Screen high-quality fresh bulbs of Allium cepa L. free from mold, rot, pests, and impurities. Secure a stable supply from core producing areas to ensure consistent raw material quality.
- **Cleaning and Drying**: Adopt low-temperature cleaning and strictly control the drying temperature (≤ 55℃) to avoid the thermal decomposition of active ingredients and ensure raw material cleanliness.
- **Alcohol-Water Extraction**: Precisely control the ethanol concentration (70%) and extraction temperature (55℃ - 60℃) to maximize the retention of active ingredients such as total flavonoids and sulfur-containing compounds, and improve the extraction recovery rate (≥ 85%).
- **Spray Drying**: Precisely control the inlet air temperature (180℃ - 200℃) and outlet air temperature (80℃ - 90℃) to ensure the fluidity of the powder and the stability of active ingredients, and avoid caking.
- **Comprehensive Testing**: Conduct comprehensive factory testing for each batch of products, covering all indicators including active ingredients, heavy metals, and microorganisms. Only products that pass the test can be packaged and warehoused to achieve traceability of quality.