Specification Sheet for Rosemary Grapefruit Concentrate Powder

I. Basic Product Information

▲ Product Name: Rosemary Grapefruit Concentrate Powder

▲ English Name: Rosemary Grapefruit Concentrate Powder

▲ Form: Light yellow to pale yellow-green powder, free from lumps and visible impurities, with good flowability.

▲ Sensory Characteristics: Combines the fresh fruity aroma of grapefruit with the distinctive herbal scent of rosemary. Slightly sour taste with a sweet aftertaste, free from bitter or off-flavors. No artificial flavors or sweeteners added.

▲ Product Grade: Food Grade (can be upgraded to Health Supplement Grade upon request)

▲ Product Definition: A natural composite fruit-vegetable-herb concentrate powder made from fresh sweet orange pomelo and cultivated rosemary as core raw materials. Produced through low-temperature extraction, blending, vacuum concentration, and spray drying. Enriched with grapefruit aroma and rosemary active components (rosmarinic acid, total flavonoids). Contains no synthetic additives. Offers both flavor and functionality, serving as a natural and healthy food ingredient.

▲ Application Scope: Functional beverages, solid beverages, bakery products, health foods, dietary supplements, confectionery, etc.

Core Applications:

- Functional Beverages: Added to fruit/vegetable juices, herbal teas, sports drinks to enhance flavor complexity and impart antioxidant properties. Recommended addition: 1%-3%.
- Solid Beverages: Serves as a core ingredient combined with other fruit/vegetable powders or grain powders to create instant herbal fruity drink mixes. Recommended addition: 3%-5%.
- Bakery Products: Incorporated into biscuits, cakes, bread, etc., to balance sweetness and add natural herbal-fruity notes. Recommended addition: 1%-2%.
- Dietary Supplements: Used as an excipient in capsules and tablets to help increase active component content, meeting formulation needs for health supplements. Recommended addition: 2%-5%.

II. Raw Material Specifications

1. Grapefruit Material: Selected fresh ripe grapefruit (variety: Sweet Orange Pomelo), sourced from premium domestic growing regions. Free from rot, mold, pests, and diseases. Soluble solids ⩾11° Brix, moisture content ⩽85%. Compliant with national food safety standards GB 2762 and GB 2763.
2. Rosemary Material: Selected cultivated rosemary tender stems and leaves. Free from impurities and aged/withered branches. Rosmarinic acid content ⩾1.2%, moisture content ⩽12%.

Compliant with relevant requirements of the *National Food Safety Standard for the Use of Food Additives* (GB 2760).

3. Excipient: Maltodextrin (Food Grade, DE value 18-20, used as a carrier, addition ≤30%). No other artificial additives.

III. Production Process

Raw Material Selection → Cleaning & Pretreatment (grapefruit peeling/deseeding, rosemary cleaning/rinsing) → Separate Crushing/Pulping → Rosemary Extraction (low-temperature ultrasound-assisted water extraction, temperature ≤50° C, time 2h) → Grapefruit Juice Pressing & Filtration (100-mesh filter) → Mixing & Blending of extract and juice → Low-temperature Vacuum Concentration (temperature ≤45° C, vacuum -0.08~-0.09 MPa, concentrated to solids ≥40%) → Spray Drying (inlet air temp 160-170° C, outlet air temp 70-75° C) → Milling & Sieving through 80 mesh → Homogeneous Mixing → Finished Product Testing → Aseptic Packaging

Process Characteristics: Full low-temperature operation preserves active components and flavor of raw materials; no organic solvent residues, conforms to food-grade production standards.

IV. Physicochemical Indicators

1. Moisture: ≤5.0% (Test method: GB 5009.3 Direct Drying)
2. Ash: ≤6.0% (Test method: GB 5009.4 Ashing Residue)
3. Solubility: ≥95% (25° C, 10% aqueous solution, stirred 3min, no significant sediment)
4. Particle Size: ≥98% pass rate through 80 mesh (Test method: Standard Sieve Screening)
5. Rosmarinic Acid Content: ≥0.3% (Test method: HPLC)
6. Total Flavonoid Content (calculated as Rutin): ≥0.8% (Test method: UV Spectrophotometry)
7. pH Value: 3.5-4.5 (1% aqueous solution, 25° C)
8. Bulk Density: 0.5-0.7 g/cm³

V. Microbiological Indicators

1. Total Plate Count: ≤1000 CFU/g (Test method: GB 4789.2)
2. Mold & Yeast: ≤50 CFU/g (Test method: GB 4789.15)
3. Coliforms: ≤30 MPN/100g (Test method: GB 4789.3)
4. Pathogens (Salmonella, Staphylococcus aureus, Shigella, Vibrio parahaemolyticus): Not Detected (Test method: GB 4789 series standards)
5. Mycotoxin (Aflatoxin B_1): ≤5 μg/kg (Test method: GB 5009.22)

VI. Safety Indicators

1. Heavy Metals: Lead (Pb) ≤0.5 mg/kg, Arsenic (As) ≤0.3 mg/kg, Mercury (Hg) ≤0.01 mg/kg, Cadmium (Cd) ≤0.1 mg/kg (Test methods: GB 5009.12, GB 5009.11, GB 5009.17, GB 5009.15)
2. Pesticide Residues: Complies with GB 2763 *National Food Safety Standard - Maximum Residue Limits for Pesticides in Food*. No banned pesticides detected.
3. Organic Solvent Residues: Not Detected (Test method: Gas Chromatography GC)

VII. Packaging Specifications

1. Inner Packaging: Food-grade aluminum foil vacuum bags. Net content per bag: 1kg, 5kg, 10kg (customizable upon request). Includes desiccant (food-grade silica gel).
2. Outer Packaging: Five-layer corrugated cardboard boxes. Each box contains 2, 4, or 10 inner bags, with shock-absorbing foam. Product label, batch number, net content, and other information affixed to the box exterior.
3. Packaging Requirements: Packaging conducted in a Class 10,000 clean area under aseptic conditions. Sealed tightly to prevent moisture absorption, oxidation, and contamination.

VIII. Storage & Transportation

1. Storage Conditions: Store in a cool, dry place (temperature 0-25° C, relative humidity ≤60%). Protect from light, moisture, high temperatures, and odors. Keep sealed. Store away from toxic and harmful substances.
2. Transportation Requirements: Transport at ambient temperature (avoid high heat, direct sunlight, rain). Handle with care to prevent packaging damage. For bulk transportation, cold chain (temperature 0-10° C) can be used to enhance shelf-life stability.
3. Shelf Life: 24 months from the production date when stored unopened in original packaging under specified conditions. After opening, seal and refrigerate; use within 1 month.

IX. Precautions

1. The product is prone to moisture absorption after opening. Reseal promptly and avoid prolonged exposure to air to prevent flavor loss and caking.
2. When used in formulations, adjust the addition level according to the product recipe. Recommended addition range is 1%-5% (specific dosage should be adapted as needed).
3. This product is a food ingredient and does not possess medicinal properties. It is not suitable for infants, pregnant or breastfeeding women, or individuals allergic to rosemary or grapefruit.

X. Testing Standards & Traceability

1. Implementation Standards: GB 14881 *National Food Safety Standard - General Hygienic Specification for Food Production*, GB 26687 *National Food Safety Standard - General Principles for Compound Food Additives*.
2. Each batch is accompanied by a Certificate of Analysis (COA), including batch number, production date, test items and results, supporting quality traceability.

Nutritional Information Table for Rosemary Grapefruit Concentrate Powder

Component	Per 100g	NRV%
Energy	1550 kJ	18%
Protein	2.5 g	4%
Fat	0.8 g	1%
Carbohydrates	88.2 g	29%
Sodium	⩽30 mg	2%
Dietary Fiber (as crude fiber)	4.0 g	16%
Rosmarinic Acid	⩾0.3 g	-
Total Flavonoids (calculated as Rutin)	⩾0.8 g	-
Vitamin C	⩾25 mg	28%

Notes:

1. NRV (Nutrient Reference Values) are provided only for energy and basic nutrients.
2. Functional components (Rosmarinic Acid, Total Flavonoids) do not have established NRVs, hence not indicated.
3. Vitamin C content is naturally retained from raw materials and may vary slightly depending on the batch.

Flowchart of Production Process for Rosemary Grapefruit Concentrate Powder

