Specification Sheet of Purslane Extract

1.1 Product Definition

This product is a fine powdered extract made from the whole herb of **Portulaca oleracea L.** (Portulacaceae) through washing, sorting, cutting, water extraction / water-alcohol extraction, concentration, purification, drying, pulverization and sieving. It mainly retains active ingredients including purslane polysaccharides, flavonoids, organic acids (purslane acid), alkaloids, etc. No preservatives, pigments or flavors are added. It can be widely used in food, health care products, dietary supplements and cosmetic raw materials, complying with international food raw material access standards and safety regulations, with high safety, controllability and stability.

1.2 Basic Product Information

- Product Name: Purslane Extract
- English Name: Purslane Extract
- Botanical Name: *Portulaca oleracea L.*
- INCI Name: Portulaca Oleracea Extract
- CAS No.: 90106-24-4
- EN No.: 290-105-1
- UN No.: None (Non-dangerous goods)
- Part Used: Whole herb (aerial parts)
- Extraction Solvent: Food-grade purified water / 10%~30% food-grade ethanol (adjustable as required)
- Specifications:
    - Total Flavonoids: ≥2%, ≥5%, ≥10% (HPLC)
    - Purslane Polysaccharides: ≥10%, ≥20%, ≥30% (Phenol-Sulfuric Acid Method)
    - Organic Acids (Purslane Acid / Total Acids): ≥2%, ≥5% (HPLC / Titration)

The above indicators can be customized according to customer application scenarios.

- Extraction Ratio: 10:1, 20:1; customizable range 5:1~30:1 supported

1.3 Characteristics

- Appearance: Fine yellowish-brown to brown powder, free of caking and visible foreign impurities
- Odor: Characteristic herbal odor of purslane, no pungent, moldy or rancid odor
- Taste: Slightly acidic and astringent, consistent with inherent characteristics, no off-taste
- Solubility: Soluble in warm water; water-soluble type solubility ≥90.0% (25℃)

1.4 Active Ingredients

- Total Flavonoids: ≥2.0% (dry basis), Test Method: HPLC/UV
- Purslane Polysaccharides: ≥10.0% (dry basis), Test Method: Phenol-Sulfuric Acid Method
- Total Organic Acids: ≥2.0% (dry basis), Test Method: Acid-Base Titration / HPLC
- Alkaloids: ≥0.5% (dry basis), Test Method: UV
- Protein (dry basis): ≥8.0%, Test Method: Kjeldahl Method (GB 5009.5)

1.5 Physicochemical Indicators

- Particle Size: 95% pass 100 mesh; customizable 80~120 mesh, GB/T 5507
- Loss on Drying: ≤7.0%, 105℃, 2h (GB 5009.3)
- Residue on Ignition: ≤5.0% (GB 5009.4)
- Total Heavy Metals: ≤20 mg/kg, AAS/ICP-MS
- Lead (Pb): ≤0.5 mg/kg (GB 5009.12)
- Arsenic (As): ≤0.5 mg/kg (GB 5009.11)
- Cadmium (Cd): ≤0.2 mg/kg (GB 5009.15)
- Mercury (Hg): ≤0.1 mg/kg (GB 5009.17)
- Residual Solvents: Ethanol ≤0.5%, no methanol, GC
- Pesticide Residues: BHC, DDT ≤0.05 mg/kg, complying with GB 2763

1.6 Microbiological Indicators

Comply with FDA, EFSA and Chinese National Standards

- Total Plate Count: ≤10000 CFU/g (GB 4789.2)
- Molds & Yeasts: ≤50 CFU/g (GB 4789.15)
- Coliforms: ≤100 CFU/g (GB 4789.3)
- Salmonella: Negative / 25g (GB 4789.4)
- *Staphylococcus aureus*: ≤100 CFU/g (GB 4789.10)

1.7 Nutritional Composition (per 100g, dry basis)

Item	Content	NRV% (Reference)
Energy	1480 kJ	18%
Protein	22.0 g	37%
Fat	3.2 g	5%
Carbohydrate	68.0 g	23%
Dietary Fiber	28.0 g	112%
Sodium	35 mg	2%
Note: NRV% calculated according to GB 28050-2011, EU 90/496/EEC and FDA, for reference only		

1.8 Application Fields

1.8.1 Food

Solid drinks, compressed tablets, meal replacement powder, herbal tea, functional drinks, baked foods, etc., featuring natural functions such as heat-clearing, soothing, antioxidant and metabolism-regulating.

1.8.2 Health Products / Dietary Supplements

Antioxidant, anti-inflammatory & soothing, oral / gastrointestinal care, immune-regulating capsules, granules, oral liquids, complying with USP/EP and Chinese health product requirements.

1.8.3 Cosmetic Raw Materials

Soothing & repairing, antioxidant, oil-controlling & anti-inflammatory skincare raw materials (INCI standard).

1.8.4 Pet Food

Pet oral care, gastrointestinal soothing, antioxidant functional food / snacks.

1.9 Compliance Statement

1.9.1 Standards

ISO, USP, EP, FDA 21 CFR, EU 2002/46/EC, *Chinese Pharmacopoeia*, GB 14881, GB 2760, GB 28050

1.9.2 Certifications

ISO9001, HACCP, Kosher, Halal, Organic (optional)

1.9.3 Additional Statements

- Non-GMO
- Free of common allergens
- Non-irradiated
- No preservatives, pigments, flavors
- No animal origin, suitable for vegetarians / Halal

1.10 Packaging & Storage

- Packaging: 1kg/5kg aluminum foil bag; 25kg fiber drum (double PE liner), small packages customizable
- Storage: Sealed, cool, dry and ventilated, away from light, ≤30℃, moisture and oxidation proof
- Shelf Life: 24 months (unopened); use within 30 days after opening

1.11 Key International Market Standards

- Core QC: Total flavonoids, polysaccharides, organic acids are mandatory in EU, US, Japan and Korea
- Heavy Metals / Microbes: Comply with EU 1881/2006, FDA cGMP
- Export Documents: COA, MSDS, Botanical Origin Certificate, Third-party CMA/CNAS Report

Appendix: Grades by Application

1. **Food Grade (GB-F01)**

Water extraction only, solvent-free, flavonoids ≥2%, polysaccharides ≥10%, instant, mild odor.

2. **Health Product Grade (GB-H02)**

Water extraction + membrane purification, flavonoids ≥5%, polysaccharides ≥20%, high purity, low impurities.

3. **Cosmetic Grade (GB-C03)**

Decolorized & refined, light yellow to off-white, flavonoids ≥5%~10%, no heavy metal / microbial risks.

4. **High-End Custom Grade (GB-C04)**

Multi-stage purification, flavonoids ≥10%, polysaccharides ≥30%, customizable decolorization, full water solubility, low ash.

In-depth Manufacturing Process of Purslane Extract

Portulaca oleracea is a classic medicinal and edible plant rich in flavonoids, polysaccharides, organic acids, alkaloids and other active ingredients, with antioxidant, anti-inflammatory, soothing and metabolism-regulating effects.

This process adopts:

Raw Material Selection → Low-Temperature Pretreatment → Targeted Extraction → Membrane Separation & Purification → Low-Temperature Concentration & Drying → Full-Chain Quality Control

to maximize activity retention, remove impurities and eliminate harmful residues, meeting high standards for food / health products / cosmetics.

I. Raw Material Source Control

1. Authentic Botanical Source: Fresh / dried whole herb of *Portulaca oleracea L.*; weeds, mold, insects and sediment removed.
2. Ecological Cultivation: Away from industrial zones, qualified water, controllable pesticide residues and heavy metals.
3. Incoming Inspection: Sensory, moisture, ash, pesticides, heavy metals, preliminary activity test; qualified only.

II. Pretreatment: Cleaning & Activity Preservation

1. Washing & Sorting: High-pressure countercurrent spraying + mechanical screening + manual sorting; water temperature ≤25℃ to prevent activity loss.
2. Cutting / Low-Temperature Pulverization: Cut into sections or pulverized at ≤40℃; wall breaking improves dissolution, protects heat-sensitive ingredients.

III. Core Extraction Process

1. **Low-Temperature Water Extraction (Mainstream for Food)**

Solid-liquid ratio 1:8~1:20, 20~50℃, 2~3 times, 1~2h each time; solvent-free, safe and green.

2. **Water-Alcohol Targeted Extraction (Health Products / High Activity)**

10%~30% ethanol, 30~50℃; more complete extraction, higher flavonoid / polysaccharide enrichment; solvent recyclable.

3. **Ultrasonic / Low-Temperature Negative Pressure Assistance (High-End)**

Time reduced by 50%, extraction rate increased ≥25%, activity retention ≥90%.

IV. Separation & Purification: Multi-Stage Refining

1. Plate Filter + High-Speed Centrifugation: Remove residue, colloid, crude fiber.
2. Multi-Stage Membrane Separation (Core): Ultrafiltration + Nanofiltration by molecular weight; enrich flavonoids / polysaccharides, desalt, remove monosaccharides and macromolecular impurities.
3. Decolorization & Deodorization (Cosmetics / High-End Food): Low-temperature activated carbon adsorption; light color, mild odor.
4. Detoxification: Remove tannins, pesticide residues and trace heavy metals, complying with export safety.

V. Low-Temperature Concentration

Low-temperature negative pressure dual-effect concentration, ≤60℃, vacuum -0.08~-0.09MPa, solid content 15%~25%, no activity degradation.

VI. Drying Process

1. **Spray Drying (Mainstream)**: Inlet 160~180℃, outlet 60~80℃; fine powder, instant, moisture ≤7%.
2. **Vacuum Drying**: 50~60℃, suitable for high-viscosity extract, good activity retention.
3. **Freeze Drying (High-End)**: Pre-freezing sublimation at -40℃; activity retention ≥95%, white color, excellent solubility.

After drying: Low-temperature pulverization → sieving (100 mesh) → 3D blending → uniform and stable.

VII. Quality Control System

- Key Control Points (KCP): Raw materials, extraction temperature, membrane parameters, concentration & drying, finished product full inspection
- Full Finished Product Test: Activity, physicochemistry, heavy metals, pesticides, microbes
- Equipment: HPLC, UV, AAS, ICP-MS, microbiology laboratory

VIII. Process Advantages Summary

1. High Activity: Whole process low temperature, flavonoid / polysaccharide retention ≥90%
2. High Purity: Membrane purification + decolorization, low impurities, good solubility
3. Safe & Compliant: No excess solvent / pesticides / heavy metals, no allergens
4. Stable & Uniform: Strong batch consistency, long shelf life
5. Flexible Customization: Ratio, content, particle size, decolorization, water solubility customizable
6. Green & Environmental: Water / ethanol recycling, low emission

Appendix: Simplified Flow Chart of Purslane Extract Production

