

# WOLFBERRY



This product is the dried mature fruit of *Lycium barbarum* L., a plant of the Solanaceae family. The fruit is harvested in summer and autumn when it turns red, dried with hot air, and the fruit stalks are removed, or dried until the skin is wrinkled, then sun-dried and the fruit stalks are removed.

## 【 PROPERTIES 】

This product is spindle-shaped or oval, 6 to 20 mm long, preferably 3 to 10 mm in diameter. The surface is red or dark red, with a small protruding style mark on the top and a white pedicel mark at the base. The pericarp is flexible and wrinkled; the flesh is fleshy and soft. There are 20 to 50 seeds, which are kidney-shaped, flat and warped, 1.5 to 1.9 mm long, 1 to 1.7 mm wide, and light yellow or brownish yellow on the surface. It has a slight odor and tastes sweet. This product is spindle-shaped or oval, 6 to 20 mm long, preferably 3 to 10 mm in diameter. The surface is red or dark red, with a small protruding style mark on the top and a white pedicel mark at the base. The pericarp is flexible and wrinkled; the flesh is fleshy and soft. There are 20 to 50 seeds, which are kidney-shaped, flat and warped, 1.5 to 1.9 mm long, 1 to 1.7 mm wide, and light yellow or brownish yellow on the surface. It has a slight odor and tastes sweet.

## 【 IDENTIFICATION 】

- (1) The powder of this product is yellow-orange or reddish brown. The surface of the epidermal cells of the exocarp is polygonal or long polygonal, with straight or finely wavy walls, and parallel keratin stripes on the surface of the outer flat wall. The thin-walled cells of the mesocarp are polygonal, with thin walls, and contain orange-red or reddish-brown spherical particles in the cell cavity. The stone cells of the seed coat are irregular polygonal, with thick walls, wavy walls, and clear stratification.
- (2) Take 0.5g of this product, add 35ml of water, heat and boil for 15 minutes, cool, filter, and extract the filtrate with 15ml of ethyl acetate by shaking. Take the ethyl acetate solution and concentrate it to 1ml as the test solution. Take another 0.5g of wolfberry reference medicinal material and prepare the reference medicinal material solution in the same way. According to the thin layer chromatography method (General Rule 0502), take 5μl of each of the above two solutions and spot them on the same silica gel G thin layer plate, use ethyl acetate-chloroform-formic acid (3:2:1) as the developing agent, develop, take out, dry, and examine under ultraviolet light (365nm). In the chromatogram of the test product, at the corresponding position of the chromatogram of the reference medicinal material, a fluorescent spot of the same color appears.

## 【 INSPECTION 】

The water content shall not exceed 130% (General Rule 0832 Method 2, temperature is 80°C).

The total ash content shall not exceed 50% (General Rule 2302).

The direct metals and harmful elements shall be determined according to the lead, cadmium, arsenic, mercury and copper determination method (General Rule 2321 atomic absorption spectrophotometry or inductively coupled plasma mass spectrometry).

Lead shall not exceed 5 mg/kg; cadmium shall not exceed 1 mg/kg; arsenic shall not exceed 2 mg/kg; mercury shall not exceed 0.2 mg/kg; copper shall not exceed 20 mg/kg.

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## 【 EXTRACT 】

Determined by the hot leaching method under the water-soluble extract determination method (General Rule 2201), it shall not be less than 55.0%.

## 【 CONTENT DETERMINATION 】

**Preparation of Lycium barbarum polysaccharide reference solution** Take 25 mg of anhydrous glucose reference, weigh accurately, place in a 250 ml volumetric flask, add appropriate amount of water to dissolve, dilute to scale, shake well, and obtain (each 1 ml contains 0.1 mg of anhydrous glucose) 0 **Preparation of standard curve** Accurately measure 0.2 ml, 0.4 ml, 0.6 ml, 0.8 ml, 1.0 ml of reference solution, place in stoppered test tubes respectively, add water to make up to 2.0 ml, accurately add 1 ml of 5% phenol solution to each, shake well, quickly add 5 ml of sulfuric acid, shake well, leave for 10 minutes, keep warm in a 40°C water bath for 15 minutes, take out, quickly cool to room temperature, use the corresponding reagent as blank, measure the absorbance at a wavelength of 490 nm according to the UV-visible spectrophotometry (General Rule 0401), and draw a standard curve with absorbance as the ordinate and concentration as the abscissa. **Determination method** Take about 0.5g of the crude powder of this product, weigh accurately, add 100ml of acetonitrile, heat and reflux for 1 hour, let stand, cool, carefully discard the acetonitrile solution, and place the residue on a water bath to evaporate the acetonitrile. Add 100ml of 80% ethanol, heat and reflux for 1 hour, filter while hot, wash the filter residue and filter with 30ml of hot 80% ethanol in batches, place the filter residue and filter paper in a flask, add 150ml of water, and heat and reflux for 2 hours. Filter while hot, wash the filter with a small amount of hot water, combine the filtrate and washing liquid, cool, transfer to a 250ml volumetric flask, dilute to the mark with water, shake well, accurately measure 1ml, place in a stoppered test tube, add 1.0ml of water, and measure the absorbance according to the method under the preparation of the standard curve, starting from "accurately add 1ml of 5% phenol solution each time", read the weight (mg) of glucose in the test solution from the standard curve, and calculate. This product is calculated as a dry product, and the content of wolfberry polysaccharide in terms of glucose ( $C_6H_{12}O_6$ ) shall not be less than 1.8%. Betaine is determined according to high performance liquid chromatography (General Rule 0512). Chromatographic conditions and system suitability test use amino-bonded silica gel as filler; acetonitrile-water (85:15) as mobile phase; detection wavelength is 195nm. The theoretical plate number calculated based on the betaine peak should not be less than 3000. **Preparation of reference solution** Take an appropriate amount of betaine reference, weigh accurately, add water to make a solution containing 0.17mg per 1ml, and you have it. **Preparation of test solution** Take this product and crush it, take about 1g, weigh accurately, put it in a stoppered conical flask, accurately add 50ml of methanol, weigh the weight, heat and reflux for 1 hour, cool, weigh again, make up the lost weight with methanol, shake well, and filter. Accurately measure 2ml of the filtrate, put it on an alkaline alumina solid phase extraction column (2g), elute with 30ml of ethanol, collect the eluate, evaporate to dryness, dissolve the residue in water, transfer it to a 2ml volumetric flask, add water to the scale, shake well, filter, and take the filtrate, and you have it. This product contains not less than 0.50% betaine ( $C_5H_{11}NO_2$ ) calculated on a dry basis.

## 【 NATURE AND FLAVOR AND MERIDIANS 】

Sweet, neutral. Enters the liver and kidney meridians.

## 【 FUNCTIONS AND INDICATIONS 】

Nourishes the liver and kidneys, improves the essence and improves eyesight. Used for asthenia, loss of essence, soreness of waist and knees, dizziness and tinnitus, impotence and spermatorrhea, internal heat and thirst, blood deficiency and sallow complexion, blurred

## 【 USAGE AND DOSAGE 】

6~12g.

## 【 STORAGE 】

Place in a cool and dry place, away from heat, moisture and moth.

