

## Ligusticum wallichii

### Description

A member of the Umbelliferae family, *Ligusticum wallichii* is used in Chinese medicine for a variety of hematological disorders, including ischemia and thrombosis. When combined with Astragalus, Ligusticum has demonstrated a notable immunopotentiating effect. Included in many classic Chinese formulations, it is also part of the Japanese and Korean herbal formularies. Classically, it is prescribed for headaches, abdominal pain, arthralgias, and menstrual disorders due to blood stasis.<sup>1</sup> Ligusticum's active ingredients include tetramethylpyrazine, ferulic acid, chrysophanol, sedanoic acid, and 1-2 percent essential oils.

### Clinical Indications

#### Ischemia

One-hundred-and-fifty-eight subjects with transient ischemic attacks were randomly divided into a Ligusticum group (111 cases) and an aspirin group (47 cases). The total effective rate in the Ligusticum group was 89.2 percent, compared to 61.7 percent in the aspirin group ( $P < 0.01$ ). Ligusticum increased cerebral blood flow, accelerated the velocity of blood flow, dilated the spastic artery, and decreased peripheral arterial resistance.<sup>2</sup> In another study, Ligusticum was evaluated in the treatment of ischemic stroke. Injectable preparations were shown to improve brain microcirculation through inhibiting thrombus formation, decreasing platelet aggregation, and improving blood viscosity. The effect of Ligusticum was the same or better than controls using papaverine, dextran, and aspirin-persantin.<sup>3</sup>

#### Antibacterial/Antifungal

Ligusticum has demonstrated *in vitro* antibacterial activity against several strains of pathogenic bacteria including *Pseudomonas aeruginosa*, *Shigella sonnei*, *Salmonella typhi* and *Vibrio cholera*, as well as many dermatomycoses.<sup>4</sup>

#### Inflammation

When given to guinea pigs with histamine/acetylcholine-induced bronchospasm, Ligusticum decreased plasma levels of thromboxane B<sub>2</sub>, relaxed tracheal muscle, increased the forced expiratory volume, and inhibited synthesis and release of thromboxane A<sub>2</sub>, with no adverse side effects. The total effective rate was 92 percent, compared with 62 percent in the control group ( $p < 0.01$ ).<sup>5</sup> In a Japanese study, the active ingredients in Ligusticum, tetramethylpyrazine and ferulic acid, were found to have both significant anti-inflammatory and analgesic effects.<sup>6</sup>

## Dosage and Toxicity

Ligusticum is prescribed in traditional Chinese decoctions at dosages up to 9 grams, administered over several days. Overdose symptoms may include vomiting and dizziness.<sup>1</sup>

## References

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3. Chen KJ, Chen K. Ischemic stroke treated with *Ligusticum chuanxiong*. *Chin Med J (Engl)* 1992;105:870-873.
4. Bensky D, Gamble A. *Chinese Herbal Medicine: Materia Medica, Revised Edition*. Seattle, WA: Eastland Press; 1993.
5. Shao CR, Chen FM, Tang YX. Clinical and experimental study on *Ligusticum wallichii* mixture in preventing and treating bronchial asthma. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 1994;14:465-468. [article in Chinese]
6. Ozaki Y. Anti-inflammatory effect of tetramethylpyrazine and ferulic acid. *Chem Pharm Bull (Tokyo)* 1992;40:954-956.