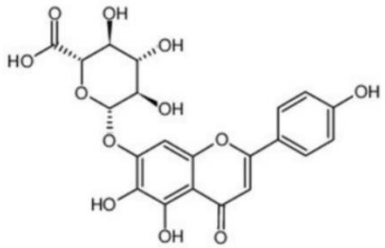
Lifeflower®
Breviscapine
(>90% Scutellarin)

What is Breviscapine?



- Flavonoid component extracted from Erigeron breviscapus, a flowering plant in the daisy family which enjoys a long history of traditional use as medicine.
- First documented in Ming Dynasty (*1436*), the plant has been used as a Traditional Chinese Medicine to treat ear infection, paralysis caused by stroke, and joint pain from rheumatism, etc.
- In the late 70s, Breviscapine, the active component, was identified and isolated from the plant. And since then, it has been used to treat cardio- and cerebrovascular in hospitals.
- Currently, it is widely utilized as a freeze-dried powder (i.v. injectable in saline solution) and over the counter (OTC) pills and tablets in China.

Lifeflower® Breviscapine

- **U.S. Patented**

Offered exclusively from Farlong® and has been sold as dietary supplements in the U.S. for 20 years.

Self-Affirmed GRAS.

- **Vertically Integrated Supply Chain**

GAP, cGMP, GSP certifications and independently verified quality meet CHP/USP monographs, U.S. and EU standards.

- **High Potency and Purity**

Standardized to contain minimum 90% Scutellarin as the primary active compound.

Lifeflower® Breviscapine

- **GAP (Good Agricultural Practices) Certified Farm**




Lifeflower® Breviscapine

- **GMP Certified Facilities**

Health Benefits of Breviscapine

- Promotes Cerebrovascular Circulation
- Supports Focus, Memory, Clarity, and Cognitive Function
- Renal and Retina Protection against Diabetes-Related Complications
- Anti-Inflammatory
- Antioxidant
- Anti-Cancer

Human Studies on Breviscapine

- Evidence from available studies show that breviscapine and scutellarin have anti-inflammatory, antioxidant, and beneficial vascular and hemodynamic effects, in additional to their low toxicity (Ghosh, 2014) (Gu, 2014).
- Breviscapine also improves the hemorheological and blood lipid parameters, as well as neuronal function and infarct absorption (Zhang S. F., 2002).
- A study was done in China with a total of 21,498 patients. 78% between 45 and 80 years old, majority male, among twenty hospitals across China. The breviscapine was given within 3 days after hospitalization at a dose between 30 to 40 ml each time for 8 to 12 days. The result indicated that the breviscapine (dengzhan xixin) treatment reduced the death rate in patients with cerebral infarction (Yang W. L., 2013).

Human Studies on Breviscapine

- A total of 1,505 patients from 16 randomized and controlled trials between 2001 to 2012 were used for a meta-analysis (Wang C. L., 2015a). These patients being treated for angina pectoris. Breviscapine was administered in the treatment group for a minimum of 14 days and maximum of 15 days. 92% of patients experienced an improvement in angina pectoris symptoms, defined as at least a 50% reduction, compared to 76% of patients treated with Western medicine alone.
- In another meta-analysis data was used from 17 randomized and controlled trials with a total of 1492 patients to analyze the treatment of unstable angina with breviscapine. The treatment effects with breviscapine were significantly better than those in the control group for ECG improvement ($p<0.00001$) (Nie, 2012).
- The influence of breviscapine administration on coronary heart disease outcomes was analyzed using the hospital information system from 20 hospitals across China. A total of 2,325 cases of coronary heart disease were divided into a test group receiving breviscapine plus conventional treatments and a control group receiving conventional treatments only (1,557 cases). Generalized and boosted models were used to identify the cure rate and the mortality of coronary heart disease. Study shows that breviscapine significantly improves the cure rate and reduces the mortality rate of patients with coronary heart issues (Lu P. F., 2013).

Human Studies on Breviscapine

- Data from a total of 2,260 patients in stages III-IV of diabetic nephropathy from 34 randomized and controlled studies was gathered, with 1,158 patients receiving treatment with breviscapine plus conventional medicine and 1,102 receiving conventional medicine only. 20 to 100 mg of breviscapine breviscapine protects against diabetic kidney complications by reducing urine proteins, improving renal function, and improving dyslipidemia associated with diabetes (Liu X. Y., 2016).
- A total of 17 clinical randomized and controlled studies were included in a meta-analysis with 1,398 patients suffering from diabetic peripheral neuropathy. 718 were treated with breviscapine and vitamin B12 and 680 with vitamin B12 alone continuously for 2-6 weeks. Breviscapine combined with vitamin B12 significantly improved the nerve conduction velocity for diabetic peripheral neuropathy (Zheng, 2015).
- A randomized and double-blind clinical trial with 40 patients with a primary open-angle glaucoma, visual field defects and postsurgical Intraocular pressure (IOP) of <18 mmHg was conducted. Two tablets of breviscapine or placebo were given to the patients three times a day for 6 months. Breviscapine was found to significantly decrease the mean defect and the mean sensitivity after treatment. (Zhong, 2010).

Animal Studies

- Anti-ischemic Stroke

In one study, brain I/R injury was created for rats by MCAO for 2 h followed by reperfusion for 24 h (Hu, 2005) causing had an infarct area of 31.26±6.02%, a neurological score of 2.92±1.27, and a significantly increased Blood-Brain Barrier (BBB) permeability. Dosages of 25, 50, and 75 mg/kg were administered by intragastric administration (i.g.) for 7 days, which reduced the infarction area to 25.63%± 5.12%, 18.23± 3.63% and 9.24± 4.11%, respectively. At the 50 and 75 mg/kg does, BBB permeability was reduced to near the sham control level. This neuroprotective effect of scutellarin against I/R injury was confirmed in a separate study at doses of 50 and 75 mg/kg in a similar I/R rat model (Zhang H. F., 2009b).

Animal Studies

- Anti-Cancer

One observation indicated that scutellarin at a concentration of 100 μM sensitized HCT116 human colon cancer cells to resveratrol and 5-fluorouracilevoked apoptosis in a p53-dependent manner (Chan, 2009). It was also found that scutellarin induced the apoptosis of HepG2 cells, a human hepatocellular carcinoma (HCC) cell line (Wu, 2010b). Scutellarin elicited the apoptosis of HepG2 tumor cells by inhibiting the STAT3 (signal transducer and activator of transcription protein 3) pathway (Xu, 2013).

A mouse orthotopic liver xenograft model was treated with 50 mg/kg/day scutellarin or normal saline by i.p. daily for 35 days. The result indicated that scutellarin inhibited the lung and the intrahepatic metastasis and the growth of implanted HCC in mice (Ke, 2017).

In a xenograft model of tongue squamous carcinoma, the growth of xenograft tumors in nude mice was significantly inhibited by the administration of scutellarin (Li H. H., 2013a). Scutellarin inhibited the proliferation and induced the apoptosis of the tumor cells and modulated the expression of matrix metalloproteinase (MMP)-2 and -9, as well as integrin αvβ6, genes implicated in tumor growth and metastasis, at the mRNA and protein levels in vivo.

Several liver, lung, and oral cancer animal studies indicated that scutellarin inhibited the lung and intrahepatic metastases and the growth of implanted HCC in mice, significantly reducing the growth of the lung cancer cells A549 and NCL-H460 (Zeng, 2017). Scutellarin diminished the proliferation of B-lymphoma Namalwa cells in vitro and inhibited the growth of lymphoma in Namalwa cell-xenotransplanted mice without causing apparent toxicity (Feng, 2012).

Animal Studies

- Anti-Thrombosis and Anti-Coagulation

Erigeron breviscapus flavones were shown to significantly inhibit the formation of thrombi induced by ADP, arachidonic acid, and platelet activating factor (Shen, 2000). Scutellarin could inhibit platelet aggregation in rats by reducing the platelet cytosolic free calcium concentration (Li W. X., 2004a).

Breviscapine significantly delayed the coagulation time and the prothrombin time, inhibited platelet factor III activity, and decreased the euglobulin lysis time, thereby enhancing anticoagulation (Wang Y. Y., 2003).

Applications

Light yellow fine powder, Odorless, Neutral Taste

- **Beverages, such as sports drink**
- **Functional Foods, such as nutritional bar, yogurt, smoothie**
- **Dietary Supplements**

  Capsules, Softgels, Tablets, Powder