



- **Latin Name:** *Tripterygium wilfordii*
- **Active Ingredient:** Triptolide, Celastrol, Wilforine
- **CAS No.:**
- **Test method:**
- **Specifications:** 10:1, 5:1, 4:1

Product Description:

Name : *Tripterygium wilfordii* Extract

Source: Thunder God Vine

Botanical Name : *Tripterygium wilfordii*

Extract part: root

Composition Ratio : 10:1

Appearance: Fine Brownish Yellow powder

Country of origin: P.R. China

Source

Tripterygium wilfordii (of the family Celastraceae) is a vine used in traditional Chinese herbal medicine that is referred to as léi gōng téng (Mandarin) but also well known as Thunder God Vine or Thunder Guke Vine.

Mainly grow in China the plant is known as toxic however its pharmacological effects appear against inflammatory and autoimmune diseases .In traditional Chinese herbal medicine the root pulp have effects (to use diction common to traditional medicine) for 'dispelling wind and eliminating dampness, dredging collaterals and relieving pain, reducing swelling and easing pain' therefore is used in treatment for fever, chills, edema, carbuncles and Rheumatoid Arthritis .Nowadays the investigation of *Tripterygium wilfordii* has expanded its potential usage to treat a variety of disorders including cancer, chronic hepatitis, chronic nephritis, ankylosing spondylitis, polycystic kidney disease, and obesity, as well as several skin disorders.

Although the vine being associated with adverse effects even at moderate doses (diarrhea, headache, nausea and infertility), there are have been progressive researches to investigate a safer usage of *Tripterygium wilfordii*.

The main bio-actives

Since 赵承嘏(Zhao C G) first reported the extract of tripterine(Celastrol) there are more than 70 compositions have been isolated from *Tripterygium wilfordii* .Most of those are alkaloids,

diterpenes, triterpenoids, sesquiterpenoids and polyose. And the most well known constituents are Wilforine, Triptolide and Celastrol.

Celastrol (tripterine) is a pentacyclic triterpenoid mainly isolated from the root extracts of *Tripterygium wilfordii* (Thunder god vine) and exhibits antioxidant, anti-inflammatory, anticancer, insecticidal activities as well as obesity-controlling effects in mice.

Triptolide is a diterpenoid epoxide that displays immunosuppressive and anti-inflammatory activity. It also has in vitro and in vivo activities against mouse models of polycystic kidney disease and pancreatic cancer.

Triptolide, a diterpene triepoxide, is a major active component of extracts derived from *Tripterygium wilfordii* as well. Triptolide has multiple pharmacological activities including anti-inflammatory, immune modulation, antiproliferative, and proapoptotic activity.

Pharmacological functions

Obesity-control

Celastrol extracted from the plant has been reported on "Cell" as having potential as a leptin sensitizer in treating obesity. This new published research discovered that Celastrol, a pentacyclic triterpene extracted from the roots of *Tripterygium Wilfordii* plant, is a powerful anti-obesity agent. Celastrol suppresses food intake, blocks reduction of energy expenditure, and leads to up to 45% weight loss in hyperleptinemic diet-induced obese (DIO) mice by increasing leptin sensitivity. Based on the experiment, celastrol is effective in hyperleptinemic and leptin-resistant DIO mice and should have minimal or no effects in lean, ob/ob, or db/db mice and reduces food intake without leading to a reduction in energy expenditure; moreover, its effect gradually diminished as the obese mice lose weight and leptin levels return to normal.

Contraception

The plant contains at least six active compounds which have male anti-fertility effect. Not enough is known about *T. wilfordii* to actually test it as a contraceptive yet. However, what has been learned has led to research on its potential as a contraceptive: in both animals and humans, low doses of various *Tripterygium* extracts can produce significantly lowered sperm density and motility indices without major side effects. When the treatment was ended in the various trials, all indices returned to normal within months.

Inflammation inhibition

Tripterygium wilfordii has direct effect against inflammation, increase and release of Vascular permeability, inflammatory cell chemotaxis, prostaglandin (PGE₂) as well as other inflammation mediators during inflammation. In addition, *Tripterygium wilfordii* exerts anti-inflammatory effects by exciting the hypothalamus, pituitary gland, adrenal axis.

Immunosuppression

By lowering T cell receptors signaling pathways *Tripterygium wilfordii* can prevent the activation of T cell proliferation and induce T cell apoptosis and inhibit T cell immune.

Tripterygium wilfordii can activate the inhibiting T lymphocyte (TS) proliferation to inhibit T lymphocyte activity and B cells to produce antibodies, inevitably, cause cellular and humoral

immune suppression.

Tripterygium wilfordii inhibits B lymphocytes and mononuclear cell to secrete proinflammatory cytokines interleukin 6 (IL - 6) tumor necrosis factor (TNF alpha) .

In conclusion ,inflammation inhibition effect of *Tripterygium wilfordii* has been used for clinical application in the anti-inflammatory and suppression of immunological rejection.

Antitumor

Following the discovery of Kupchan on the obvious anti-tumor effect that *tripterygium wilfordii* has , many researchers carried out relevant research.The anti-cancer effect of Triptolide ,Triptiolide and Triptonide have proved.Tripterygium wilfordii armour about 60 kinds of tumor cell strains.With colorectal cancer cell strain and breast cancer cell strain are most sensitive, follwing by central nervous system tumor cell strain.There are experiments also showed ,triptolide and triptiolide can inhibit the synthesis of RNA and protein, and interfere with DNA replication during antitumor activities. Another anti-cancer active ingredients of *Tripterygium wilfordii* is Celastrol ,can control the cancer cells protease and induce cancer cells apoptosis.It is a new type of proteasome inhibitors with the effective rate from 65% up to 93% and experiments prove that the hyperplasia of prostate cancer in nude mice has been efficiently inhibited .Tripterygium wilfordii acts on its alkylation to inhibit the synthesis of DNA, but also adjust the immune function of antibody.

In addition, there are researches exhibited the anti-rejection effect ,antioxidant activity , anti-fibrosis activity ,anti-atherosclerosis activity ,anti-HIV activity ,apoptosis-inducing activity ,nervous tissue protection effect of *tripterygium wilfordii* .Moreover ,the insecticidal activity of *tripterygium wilfordii* has also been proved in related researches .

Product application

Despite all modern advances in medicine, an effective drug treatment of obesity has not been found yet.Discovery of Leptin sensitizer is critical as the most powerful energy metabolism control hormone leptin is constantly facing resistance in obese body .Celastrol in *tripterygium wilfordii* has been indicated as a leptin sensitizer and a promising agent for the pharmacological treatment of obesity.

Also many researches relating *tripterygium wilfordii* pharmacology shown its positive effects against tumor ,HIV ,inflammatory and autoimmune disorder.

In addition to medical applications, *tripterygium wilfordii* have potential as a very efficient and environmental-friendly insecticidal avail.

Main clinical applications of *tripterygium wilfordii* are :

rheumatic arthritis (RA) ,lepra reaction ,lupus erythematosus (SLE),dermatomyositis , mixed connective tissue disease (MCTD) ,Sjogrensyndrome(SS),erythema multiforme ,various types of vasculitis and psoriasis.

Side effects

Tripterygium wilfordii being associated with many adverse effects including:diarrhea, anorexia, emesis, headache, nausea, stomachache, infertility ,rash of skin mucous membrane and Leucopenia .Handling of *tripterygium wilfordii* extract should only be performed by personnel trained and familiar with handling of potent active pharmaceutical ingredients. Moderate to severe

irritant to the skin and eyes.

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