



Coptis chinensis – Coptis

***Coptis chinensis* 1:2 Fluid extract**

Common Names: Coptis, Goldthread, Coptidis, Huang Lian

Botanical family: Ranunculaceae

Part Used: Rhizome

Dosage: 20ml to 50ml per week

Primary Active Constituents: Isoquinoline alkaloids, including berberine 3-8%, palmatine, jatrorrhizine, coptisine and columbamine; lignans, phenylpropanoids, flavonoids, phenolic acids, sterols^{1,2}.

Cautions & contraindications: Berberine-containing plants are not recommended for use during pregnancy or during lactation due to their potential for causing uterine contractions³ and bilirubin stimulation⁴.

Actions: Antiviral, Antimicrobial, Endocrine modulator, Antifungal, Antioxidant, Antiparasitic, Anti-inflammatory, Hypoglycaemic, Cancer protective.

Main Indications: Bacterial, Viral and Fungal infections, Irritable bowel syndrome, Metabolic syndrome, Diabetes mellitus, PCOS, Parasites, Inflammatory conditions of mucous membranes, GI tract and Skin conditions (including acne, psoriasis and recurrent mouth ulcers).

Historical Use & Research Summary

Coptis (*Coptis chinensis*) is a low growing plant indigenous to the mountainous regions of China. Coptis is also known as huang lian; literally translating to “yellow thread”, because of the intense golden colour (due to berberine content) of its rhizomes.

It has been used in Traditional Chinese Medicine to treat digestive, respiratory, and infectious disorders for more than 2000 years and is a rich source of the bioactive constituent berberine³⁻⁵.

Berberine has been intensively studied, and has many actions attributed to it. Of note, however, is the finding that berberine does not cross the gastrointestinal tract membrane readily; its actions are most focussed therefore, in the gastrointestinal tract itself.

Antiviral

Preclinical trials found berberine effective against chikungunya virus (CHIKV), H1N1 influenza virus, herpes simplex virus (HSV), human cytomegalovirus (HCMV), and respiratory-syncytial virus (RSV)⁶⁻⁸. Palmatine has also shown inhibitory effects against West Nile virus⁹.

Obesity / Diabetes

A systemic review noted that Coptis demonstrated anti-obesity results including weight reduction, lowered lipids, reduced lipid synthesis, and inhibited adipogenesis, while regulating gut microflora to promote weight reduction¹⁰. A meta-analysis concluded that Coptis alkaloids significantly lowered total and LDL cholesterol and triglycerides, while raising HDL cholesterol¹¹.

Research Summary continued

Hypolipidaemic activity by Coptis alkaloids appears to occur in part via conversion of cholesterol to bile acids, and bile flow promotion via gene expression^{12, 13}.

Coptis also demonstrates beneficial effects for blood glucose control in the treatment of type 2 diabetic patients, and co-administration with conventional oral hypoglycaemic drugs improved glycaemic control^{11, 14}.

Polycystic ovarian syndrome (PCOS)

Berberine has shown promise due to its ability to regulate insulin and glucose, inhibit excessive testosterone production, benefit the gut microbiota, as well as reduce acne^{15,16, 17}. In two clinical trials, researchers compared berberine to metformin for women with PCOS. After three months, both berberine and metformin groups exhibited improvements in insulin, body weight, and testosterone levels¹⁸. Both berberine and metformin increased pregnancy rate and reduced the incidence of severe ovarian hyperstimulation syndrome. Berberine treatment was associated with greater decreases in BMI, lipid parameters, total FSH requirement, and an increase in live birth rate with fewer GI adverse events¹⁹.

Gastroenteritis

Coptis has been used extensively in Chinese medicine to treat gastroenteritis and dysentery. Modern studies focus on berberine, determining it to be safe and effective in treating common gastrointestinal infections, including *Escherichia coli* (the common cause of 'traveller's diarrhoea'), *Salmonella typhimurium* (food poisoning), and *Shigella dysenteriae*^{3, 20, 21}. Berberine's efficacy may be due to a combination of direct antimicrobial activity, inhibition of microbial attachment to mucous membranes and epithelial surfaces, and ability to block actions of toxins produced by pathogenic bacteria²⁰⁻²³.

Irritable and Inflammatory Bowel conditions

Coptis is traditionally used to address syndromes involving abdominal pain and diarrhoea. Berberine can reduce inflammation in the intestines, significantly reduce smooth muscle contraction and intestinal motility (thus reducing cramping), and delay intestinal transit time²³. Potential benefits in Inflammatory Bowel Disease, and on gut microbiota, have also been reported^{23, 24}.

Antimicrobial

Coptis and berberine are well known antibacterial agents, and may inhibit biofilm formation, demonstrated with regards to *Klebsiella pneumoniae*²⁵ and *Salmonella*²¹. However, they may also kill bifidobacteria in the process. Berberine extracts have also shown promise treating *Mycoplasma* species²⁶ as well as urethritis and cervicitis due to *Chlamydia spp*²⁷.

Coptis extracts also strongly inhibit *Candida spp.* growth and biofilm²⁸. Antibiofilm and P-glycoprotein inhibitory effects by berberine and other alkaloids, may contribute to the synergistic effects shown with several antibiotics against resistant bacteria^{29, 30, 31, 32, 21}. Berberine itself, however, can be prone to cellular efflux by resistant bacteria³³.

Antiparasitic

Coptis extracts were found to be highly inhibitory against *Blastocystis spp.* in a number of *in vitro* trials³⁴, while berberine has demonstrated activity against *Entamoeba histolytica*, *Giardia lamblia*, and *Trichomonas vaginalis*³⁵. Berberine hydrochloride at 10mg/kg/day for 10 days in children achieved a 90% reduction in Giardia-positive stools³⁶.

Antioxidant

Coptis, as well as its major alkaloids, possesses potent protective activity against oxidative damage, as demonstrated in multiple pharmacological investigations³⁷. It elevates antioxidant enzymes such as SOD and glutathione peroxidase, while reducing ROS. Studies demonstrate effects topically and internally, suggesting a protective effect against UVB light as well as supporting liver and erythrocyte function³⁸.

Skin Conditions

Coptis has demonstrated protective effects against radiation and UV-induced skin damage^{39, 40}. Suppression of inflammation as a result of *Propionibacterium* acne, has also recently been reported⁴¹.

Anticancer

Berberine has inhibitory effects on colorectal cancer, lung cancer, ovarian cancer, prostate cancer, liver cancer, and cervical cancer cell lines *in vitro* through multiple mechanisms^{39, 42}.

References available on request

Coptis chinensis

Suggested Combinations

Diabetes mellitus, Metabolic syndrome

- Green Tea
- Kudzu
- Goat's Rue
- Bitter Melon
- Glossy Privet

Inflammatory mucous membrane conditions

- Hoheria
- Calendula
- Marshmallow
- Pomegranate

PCOS

- White Peony
- Liquorice

Irritable Bowel Syndrome

- Fennel
- Kawakawa
- Ginger
- Hoheria