

The Longwood Herbal Task Force
(<http://www.mcp.edu/herbal/default.htm>) and
The Center for Holistic Pediatric Education and Research

Cat's Claw (*Uncaria tomentosa*)

Kathi J. Kemper, MD, MPH

Overview

The primary traditional uses of cat's claw in Peru are as an anti-inflammatory, contraceptive and anti-cancer remedy. The research on cat's claw in animal and *in vitro* studies is very preliminary; there are no controlled trials evaluating its clinical effects in humans. Products marketed as cat's claw may include a variety of related and unrelated species with widely varying amounts of the active alkaloids or may be contaminated with other species. Herbalists recommend that cat's claw not be used during pregnancy, lactation or in children less than three years old, patients undergoing grafts and organ transplants, hemophiliacs, and patients receiving vaccines, sera, immune globulin, insulin or thymus extracts. Aside from mild nausea, it appears to have few side effects; there is one case report of acute renal failure in an adult with systemic lupus erythematosus who took cat's claw.

Historical and Popular Uses

For over 2000 years, the Ashaninka Peruvian rain forest people have used cat's claw (*U. tomentosa*) as a tonic to ward off disease, a contraceptive and abortifacient, and to treat various inflammatory diseases including gastric ulcers, diarrhea and GI tumors, gonorrhea, arthritis and rheumatism, acne, diabetes, diseases of the urinary tract and cancer^{1,2}. Sometimes cat's claw is used in combination with other local herbs such as chuchuhuasi bark to treat arthritis. It is traditionally contraindicated in pregnancy, during lactation and for children less than three years old. To the Ashaninka, the specific species containing the pentacyclic oxindole alkaloids (*U. tomentosa*) has great power which can be recognized only by high-ranking healer-priests³. A related species (*U. guianensis*) which contains tetracyclic oxindole alkaloids has been used in South America as a wound healer, a sedative and to treat intestinal ailments, but is not considered as strong a medicine as *U. tomentosa*.

Nowadays, cat's claw is used as an immune stimulant and cancer remedy; it is also used to treat inflammatory conditions, eg. arthritis and atopic disorders; gastritis and other intestinal disorders; viral infections, including HIV; chemical and environmental sensitivities; chronic fatigue; fibromyalgia; and prostate problems⁴. Demand has risen as patients have combined cat's claw with AZT as a treatment for HIV disease.

Cat's claw is included in some herbal combination remedies, e.g. with capsaicin in the arthritis cream, Nikken Anti-Arthritis. Some Essiac tea mixtures now contain cat's claw in addition to the four traditional ingredients (burdock root, sheep sorrel, turkey rhubarb root and slippery elm bark)⁵. A European product containing cat's claw is Krallendorn® tea or capsules.

Botany

Medicinal species: Uncaria tomentosa; some products may be contaminated with *U. guianensis*, which contains different alkaloids. There are 12 other species in Peru that are also called *una de gato*. Throughout the world there are 34 species of *Uncaria* with various medicinal properties. In Traditional Chinese Medicine, the “claws” or “hooks” of *Uncaria* are used as a sedative and antispasmodic remedy⁶. A Chinese herbal compound, Gou-teng, containing another species, *Uncaria rhynchophylla*, is used as a sedative, anticonvulsant and antihypertensive remedy⁷⁻⁹. One of its derivatives, isorhynchophylline, is a negative chronotrope in animals¹⁰. In other Asian cultures, another *Uncaria* species, *callophylla*, is used as an antihypertensive remedy¹¹.

Common names: Cat's claw, Una De Gato, Garabato, Life-giving vine of Peru, Samento, Popokainangra, Unganangi. Another plant, *Acacia gregii*, which grows along the Texas-Mexico border, may be substituted for South American cat's claw sold in America; *A. gregii* may be poisonous, containing a cyanide-based chemical compound.

Botanical Family: *Rubiaceae* (madder family)

Plant description: A slow-growing, high-climbing, woody vine that can grow to 100 feet in length, taking up to 20 years to reach maturity. Roots can be harvested after three to eight years. Its name is derived from hook-like thorns on the stems that it uses to climb up trees. The part used medicinally is the inner bark of the roots and stems.

Where it's grown: Peruvian rain forest and now other areas in Central and South America. Other species are indigenous to Asia.

Biochemistry

Cat's Claw: Active Chemical Constituents

- Oxindole alkaloids: isopteropodine, pteropodine, mitraphylline, isomitraphylline, uncarine F, speciophylline, 3-isoajmalicine, 19-epi-3-isoajmalicine, uncarine B
- Polyhydroxylated triterpenes¹²
- Plant sterols: beta sitosterol (80%), stigmasterol, campesterol¹³
- Catechin tannins
- Polyphenols: epicatechin and proanthocyanidins¹⁴
- Quinovic acid glycosides^{15,16}
- Flavonoids¹⁷

Biochemical screening has uncovered more than sixty unique *oxindole alkaloids*¹⁸, which vary markedly among the different *Uncaria* species^{19, 20,21,22}. The alkaloid content can vary 10- to 40-fold depending on cultivation techniques and the season when the plant is harvested^{21,23}. Chinese and German researchers have identified two chemical types of *U. tomentosa*, one of which contains immune-stimulating *pentacyclic oxindole alkaloids* while the other contains antagonistic *tetracyclic oxindole alkaloids* that act on the central nervous system^{3,24}; some appear to have anti-leukemic activity²²; some stimulate phagocytosis *in vitro*²⁵.

Polyhydroxylated triterpenes: triterpenoidic saponins have demonstrated anti-tumor effects *in vitro* against Ehrlich carcinoma cells²⁶.

Three *sterols: beta sitosterol* (80%), *stigmasterol*, and *campesterol*, have been identified and proven to be mild inhibitors of cholesterol synthesis *in vitro*²⁷. They also appear to have moderate anti-inflammatory properties in Italian studies¹³.

Tannins are phenolic compounds that typically act as astringents and are found in a variety of herbal products used for wound healing, drying weeping sores, etc. Plants that contain

more than 10% tannins have potential adverse effects including upset stomach, renal damage, hepatic necrosis, and increased risk of esophageal and nasal cancer. Cat's claw contains very low levels of tannins that are probably not clinically significant.

Proanthocyanidins are antioxidant compounds found in a variety of herbal products, including cat's claw¹⁸.

At least seven *quinovic acid glycosides* (QAG's) have been isolated from cat's claw bark¹⁵. QAG7 functions as an anti-inflammatory compound in animal studies²⁸. Additional quinovic acid glycosides have been isolated from a related species, *Uncaria guiansis*²⁹.

Flavonoids are antioxidant compounds found in a variety of herbal products.

Experimental Studies

Cat's Claw: Potential Clinical Benefits

1. Cardiovascular: Hypertension, hypercholesterolemia
2. Pulmonary: none
3. Renal and electrolyte balance: Urinary tract inflammation
4. Gastrointestinal/hepatic: none
5. Neuro-psychiatric: none
6. Endocrine: Diabetes
7. Hematologic: none
8. Rheumatologic: Arthritis
9. Reproductive: Contraceptive, abortifacient
10. Immune stimulation/suppression: Immune stimulant, anti-inflammatory
11. Antimicrobial: Antiviral
12. Antineoplastic: Antileukemic, antimutagenic
13. Antioxidant: Antioxidant
14. Skin and mucus membranes: Vulnerary (wound healing)
15. Other/miscellaneous: none

1. **Cardiovascular:** Hypertension, hypercholesterolemia

a. Hypertension

- i. *In vitro data:* In Chinese studies of isolated rabbit aortas and rat ventricular myocytes, rhynchophylline and isorhynchophylline from *U. rhynchophylla* blocked the voltage-dependent calcium channel^{30,31}. These compounds are not found in meaningful quantities in the roots of South American cat's claw.
- ii. *Animal data:* In rats and rabbits, the alkaloid rhynchophylline from *U. rhynchophylla* hooks dilated peripheral blood vessels, inhibited sympathetic nervous system activities, lowered heart rate and lowered cholesterol³²; isorhynchophylline given intravenously to rats is a negative chronotrope¹⁰. The Japanese herbal remedy, chotoko (dried hooks of *Uncaria*) is hypotensive^{33,34}. These effects are not noted in South American *U. tomentosa*.

- iii. *Human data*: none
 - b. **Hypercholesterolemia**
 - i. *In vitro data*: Beta sitosterol mildly inhibits cholesterol synthesis at the level of HMC-CoA reductase²⁷.
 - ii. *Animal data*: none
 - iii. *Human data*: none
- 2. **Pulmonary**: none
- 3. **Renal and electrolyte balance**: Urinary tract inflammation: Traditional use; no data.
- 4. **Gastrointestinal/hepatic**: none
- 5. **Neuro-psychiatric**: none
- 6. **Endocrine**: Diabetes: Traditional use; no data.
- 7. **Hematologic**: none
- 8. **Rheumatologic**: Arthritis
 - i. *In vitro data*: The plant sterols in cat's claw, beta-sitosterol, stigmasterol and campesterol, had moderate anti-inflammatory properties in Italian studies¹³.
 - ii. *Animal data*: In the rat paw model, cat's claw glycosides had anti-inflammatory effects²⁸.
 - iii. *Human data*: Case reports note significantly improved rheumatism. No controlled trials. Interactions with other medications not tested.
- 9. **Reproductive**: Contraception, abortifacient: Traditional use; no data other than case reports³⁵.
- 10. **Immune stimulation/suppression**: Immune stimulant, anti-inflammatory
 - a. Immune stimulant
 - i. *In vitro data*: Oxindole alkaloids, particularly *isopterdine* and *pterodine*, stimulated phagocytosis *in vitro*²⁵.
 - ii. *Animal data*: Mice given cat's claw root bark extract had a 30% - 40% increase in macrophage activity; mice given stalk bark extract had 10% - 20% increase in activity.
 - iii. *Human data*: German manufacturers of Krallendorn report that oncology patients treated with cat's claw extracts in addition to their standard treatment have more

vitality and fewer side effects from chemotherapy and radiation. We were unable to find peer-reviewed data to support these claims.

- b. Anti-inflammatory: A popular herbalist recommends cat's claw as a remedy for gout³⁶.
 - i. *In vitro data*: none
 - ii. *Animal data*: The quinovic acid glycoside 7 from cat's claw bark reduced experimentally induced inflammation in the rat paw model²⁸.
 - iii. *Human data*: none

11. **Antimicrobial:** Antiviral

- i. *In vitro data*: Quinovic acid glycosides had antiviral activity *in vitro*^{16,15}.
- ii. *Animal data*: none
- iii. *Human data*: In a case series of 14 HIV-positive patients given standardized cat's claw root extract, five patients remained symptom-free over six years follow-up; nine symptomatic patients had reduced symptoms in the first year of treatment and T helper cell counts increased during the first two years. No controlled or comparison studies have been reported.

12. **Antineoplastic:** Antileukemic, antimutagenic

a. Antileukemic

- i. *In vitro data*: The oxindole alkaloids, particularly *uncarine F*, demonstrated activity against several lines of leukemic cells. Triterpenoidic saponins from cat's claw demonstrated an anti-tumor effect against Ehrlich carcinoma cells²⁶. Uncaria extracts inhibited proliferation of human tumor cells and induced apoptosis *in vitro*³⁷.
- ii. *Animal data*: none
- iii. *Human data*: Case series from Peru in the 1970's suggested encouraging results in children with leukemia. Case series reported by European manufacturers report improved symptoms and vitality in a wide spectrum of patients given cat's claw (Krallendorn preparation), many of whom were receiving other therapies as well³⁸. So far, no peer-reviewed controlled trials have been published. There are no data on drug interactions with standard chemotherapy.

b. Antimutagenic

- i. *In vitro data*: Cat's claw extracts had a significant anti-mutagenic effect against phytomutagenesis induced by psoralens plus UVA in *S. typhimurium* TA 102. The urine of a smoker who drank a decoction of cat's claw bark daily for 15 days decreased the mutagenicity of *S. typhimurium* TA98 and TA100 in the standard Ames test³⁹.
- ii. *Animal data*: none
- iii. *Human data*: none

13. **Antioxidant:** Antioxidant

- i. *In vitro data*: Methanolic extractions of both the root and bark exerted anti-oxidant effects *in vitro*⁴⁰.
- ii. *Animal data*: none
- iii. *Human data*: none

14. **Skin and mucus membranes:** Vulnerary (wound-healing): no data

15. **Other/miscellaneous:** none

Toxicity and Contraindications

All herbal products carry the potential for contamination with other herbal products, pesticides, herbicides, heavy metals and pharmaceuticals. This is particularly concerning with Asian imports.

Furthermore, allergic reactions can occur to any natural product in sensitive persons.

Potentially toxic compounds in cat's claw: Tannins, alkaloids

Acute toxicity: Traditional considered an abortifacient.

- i. *In vitro data:* In Chinese hamster ovary cells and *Photobacterium phosphoreum*, there was no *in vitro* toxicity of cat's claw extracts in the neutral red assay, total protein content, tetrazolium assay or Microtox test⁴¹. In the standard Ames' test, cat's claw had no mutagenic effects³⁹.
- ii. *Animal data:* None
- iii. *Human data:* There is one case report of acute renal failure in a woman with systemic lupus erythematosus⁴². Slight diarrhea has been noted within the first ten days of use. Sedative effects, circulatory complaints and hypotension are possible side effects in cat's claw products contaminated with species containing the tetracyclic oxindole alkaloids³.

Chronic toxicity: Unknown

Limitations during other illnesses or in patients with specific organ dysfunction: Typically contraindicated in patients with autoimmune disorders, multiple sclerosis, or tuberculosis, and patients undergoing grafts and organ transplants.

Interactions with other herbs or pharmaceuticals: Typically not recommended for those taking insulin, thymus extracts, vaccines, immune globulin or sera. Preliminary data on hypotensive effects from some alkaloids and from preparations made from the crude "hooks" suggest caution when using cat's claw in combination with antihypertensive medications.

Safety during pregnancy and/or childhood: Traditionally contraindicated during pregnancy, lactation and in children less than three years old.

Typical Dosages

Provision of dosage information does NOT constitute a recommendation or endorsement, but rather indicates the range of doses commonly used in herbal practice.

Doses are given for single herb use and must be adjusted when using herbs in combinations. Doses may also vary according to the type and severity of the condition treated and individual patient conditions.

*Adult doses*³⁸:

As a tea: 20 – 30 grams finely chopped bark of the root, boiled in one quart of water for three hours until volume is reduced to about one third. Cooled to room temperature and sipped TID.

Capsules containing dried bark: 350 – 500 mg QD or BID

Tincture: 1- 2 ml up to twice daily

Availability of standardized preparations: None

Dosages used in herbal combinations: Variable

Pediatric dosages: Unknown

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