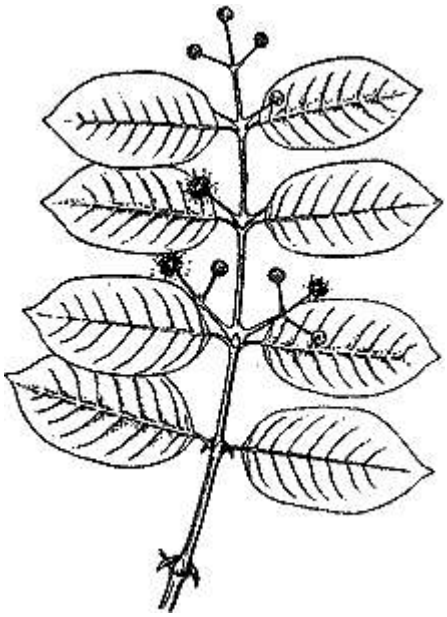
Technical Data Report

for

CAT'S CLAW

"Uña de Gato"

(Uncaria tomentosa)



Sage Press

This document is not intended to provide medical advice and is sold with the understanding that the publisher and the author are not liable for the misconception or misuse of information provided. The author and Sage Press, Inc. shall have neither liability nor responsibility to any person or entity with respect to any loss, damage, or injury caused or alleged to be caused directly or indirectly by the information contained in this document or the use of any plants mentioned. Readers should not use any of the products discussed in this document without the advice of a medical professional.

For additional copies or information regarding this document or other such products offered, call or write at sagepress@sbcglobal.net or (512) 506-8282.

Cat's claw

Preprinted from *Herbal Secrets of the Rainforest,* 2nd edition, by Leslie Taylor
Published and copyrighted by Sage Press, Inc., © 2002

(Uña de gato)

Family: Rubiaceae

Genus: *Uncaria*

Species: *tomentosa*

Synonyms: *Uncaria surinamensis, Nauclea aculeata, N. tomentosa, Ourouparia tomentosa*

Common Names: Cat's claw, uña de gato, paraguayo, garabato, garbato casha, samento, toroñ, tambor huasca, uña huasca, uña de gavilan, hawk's claw, saventaro

Parts Used: Bark, root, leaves

Cat's claw is a large, woody vine that derives its name from hook-like thorns that grow along the vine that resemble the claws of a cat. Two closely-related species of *Uncaria* are used almost interchangeably in the rainforests: *U. tomentosa* and *U. guianensis*. Both species can reach over 30 m high into the canopy; however, *U. tomentosa* has small, yellowish-white flowers, while *U. guianensis* has reddish-orange flowers and thorns that are more curved. Cat's claw is indigenous to the Amazon rainforest and other tropical areas of South and Central America, including Peru, Colombia, Ecuador, Guyana, Trinidad, Venezuela, Suriname, Costa Rica, Guatemala, and Panama. There are other species of plants with a common name of *cat's claw* (or *uña de gato)* in Mexico and Latin America; however, they derive from an entirely different plant—not belonging to the *Uncaria* genus, or even the Rubiaceae family. Several of the Mexican *uña de gato* varieties have toxic properties.

Both South American *Uncaria* species are used by the indigenous peoples of the Amazon rainforest in very similar ways and have long histories of use. Cat's claw (*U. tomentosa*) has been used medicinally by the Aguaruna, Asháninka, Cashibo, Conibo, and Shipibo tribes of Peru for at least 2,000 years. The Asháninka Indian tribe in central Peru has the longest recorded history of use of the plant. They are also the largest commercial source of cat's claw from Peru today. The Asháninka use cat's claw to treat asthma and inflammations of the urinary tract; to recover from childbirth; as a kidney cleanser; to cure deep wounds; for arthritis, rheumatism, and bone pain; to control inflammation and gastric ulcers; and for cancer. Indigenous tribes in Piura use cat's claw to treat tumors, inflammations, rheumatism, and gastric ulcers. Indian tribes in Colombia use the vine to treat gonorrhea and dysentery. Other Peruvian indigenous tribes use cat's claw to treat diabetes, urinary tract cancer in women, hemorrhages, menstrual irregularity, cirrhosis, fevers, abscesses, gastritis, rheumatism, inflammations; for internal cleansing and tumors; and to "normalize the body." Reportedly, cat's claw has also been used as a contraceptive by several different tribes of Peru (but only in excessive dosages). Dr. Fernando Cabieses, M.D., a noted authority on Peruvian medicinal plants, explains in his book that the Asháninka boil 5 to 6 kilograms (about 12 pounds!) of the root in water until it is reduced to little more than 1 cup. This decoction is then taken 1 cup daily during the period of menstruation for three consecutive months, which supposedly causes sterility for three to four years.[1]

With so many documented uses of this important rainforest plant, it is not surprising that it came to the attention of Western researchers and scientists. Studies began in the early 1970s when Klaus Keplinger, a journalist and self-taught ethnologist from Innnsbruck, Austria, organized the first definitive work on cat's claw. Keplinger's work in the 1970s and 1980s led to several extracts of cat's claw being sold in Austria and Germany as herbal drugs,[2–4] as well as the filing of four U.S. patents describing extraction procedures for a group of chemicals called *oxindole alkaloids,* and the immunostimulating actions of these alkaloids, found in cat's claw.[5–8] These novel oxindole alkaloids fueled worldwide interest in the medicinal properties of this valuable vine of the rainforest. Other independent researchers in Spain, France, Japan, Germany and Peru followed Keplinger—many of whom confirmed his research on the immunostimulating alkaloids in the vine and root. Many of these studies published from the late 1970s to early 1990s indicated that the

whole oxindole alkaloid fraction, whole vine bark and/or root bark extracts, or six individually-tested oxindole alkaloids increased immune function by up to 50% in relatively small amounts.[9–16] Independent Canadian researchers at the University of Ottawa documented that a whole vine extract demonstrated a strong immunostimulant effect in 1999.[17] Independent Peruvian researchers demonstrated that a whole extract of the vine increased immune function in rats at a dosage of 400 mg/kg in a 1998 study.[18] New, proprietary extracts of cat's claw have been manufactured from 1999 to present day, and clinical studies have been published (funded by the manufacturers of these extracts) showing that these cat's claw products continue to provide the same immune stimulating benefits as has been documented for almost 20 years.[19–22]

But then matters surrounding cat's claw muddied, as happens with market-driven research. A manufacturer of a cat's claw extract funded a study around these immune-stimulating alkaloids. Their research indicated that, supposedly, two different types of cat's claw (chemotypes) are growing in the rainforest, and/or that cat's claw produces "good alkaloids" and "bad alkaloids." It has coined the "good ones" *pentacyclic* (POA) and the "bad ones" *tetracyclic* (TOA) oxindole alkaloids. Its research attempts to prove that one set of "bad" alkaloids counteracts the immune benefits of the "good" alkaloids. Presumably, the presence of as little as 1% TOA content in a cat's claw formulation would diminish the immunostimulant effect of the formulation by as much as 30%. This research has not been confirmed by independent researchers (that is, those who are not selling cat's claw or being paid by companies selling cat's claw). It would seek to discount or disprove all the definitive, independent research done over decades in Japan, Peru, Germany, Spain, and the U.S. (including the four U.S. patents filed by these same researchers). Much of the previous independent research was performed on whole oxindole extracts and whole root or vine extracts. This research documented the presence of both types of alkaloids in their analyses and extracts—all of which showed immune stimulant actions. Indeed, some of the "new research" refuted the marketer's original (and confirmed) findings! As for the possibility of a "new chemotype": a plant doesn't change its chemical constituency in five years. Again, two species of cat's claw exist—*U. tomentosa* and *U. guianensis*—with a similar phytochemical makeup but a different ratio of oxindole alkaloids. Admittedly (in the last 5–8 years), the presence of *U. tomentosa* has declined in the Peruvian rainforest by overharvesting. The lower-growing and easier-to-find *guianensis* variety is a common "adulterant" in many large lots of cat's claw bulk material being exported out of South America today.

Cat's claw has been used in Peru and Europe since the early 1990s as an adjunctive treatment for cancer and AIDS, as well as other diseases that target the immunological system.[2–4,23,24] In addition to its immunostimulating activity, other *in vitro* anticancerous properties have been documented for these alkaloids and other constituents in cat's claw. Five of the oxindole alkaloids have been clinically documented with *in vitro* antileukemic properties,[25] and various root and bark extracts have demonstrated antitumorous and antimutagenic properties.[2,26–30] Italian researchers reported in a 2001 *in vitro* study that cat's claw directly inhibited the growth of a human breast cancer cell line by 90%,[31] while another research group reported that it inhibited the binding of estrogens in human breast cancer cells *in vitro*.[32] Swedish researchers documented it inhibited the growth of lymphoma and leukemia cells *in vitro* in 1998.[33] Early reports on Keplinger's observatory trials with cancer patients taking cat's claw in conjunction with such traditional cancer therapies as chemotherapy and radiation reported fewer side effects to the traditional therapies (such as hair loss, weight loss, nausea, secondary infections, and skin problems).[2] Subsequent researchers have shown how these effects might be possible: they have reported that cat's claw can aid in DNA cellular repair and prevent cells from mutating; it also can help prevent the loss of white blood cells and immune damage caused by many chemotherapy drugs (a common side effect called *leukopenia*).[19–21]

Another significant area of study has focused on cat's claw's anti-inflammatory properties. While plant sterols (beta-sitosterol, stigmasterol, and campesterol) and antioxidant chemicals (catechins and procyanidins) found in cat's claw account for some of these properties, new and novel phytochemicals called *quinovic acid glycosides* (found in the bark and roots) were documented to be the most potent anti-inflammatory constituents of the plant (in 1991).[34] This study and subsequent ones indicated that cat's claw (and, especially, its glycosides) could inhibit inflammation from 46% and up to 89% in various *in vivo* and *in vitro* tests.[35–41] The results of these studies validated its long history of indigenous use for arthritis and rheumatism, as well as for other types of inflammatory stomach and bowel disorders. It was also clinically shown to be effective against stomach ulcers in an *in vivo* rat study.[42] Research in Argentina reports that cat's claw is an effective antioxidant;[43] other researchers in 2000 concluded that it is an antioxidant as well

as a remarkably potent inhibitor of TNFalpha production. (TNF, or *tumor necrosis factor*, represents a model for tumor growth driven by an inflammatory cytokine.) Their research reported that the primary mechanism for cat's claw's anti-inflammatory action appears to be immunomodulation through the suppression of this cytokine.[44] Researchers in the U.S. notably reported in 2002 that the anti-inflammatory actions of cat's claw are not attributable to immunostimulating alkaloids.[45] This would explain why a product comprised of mostly alkaloids showed only modest benefit to arthritis patients by another group studying (and selling) a special alkaloid preparation of cat's claw.[46]

This same group of anti-inflammatory glycoside chemicals also demonstrated *in vitro* antiviral properties in another earlier study.[47] In addition to the immunostimulant alkaloids, cat's claw contains the alkaloids rhynchophylline, hirsutine, and mitraphylline, which have demonstrated hypotensive and vasodilating properties.[48,49] Rhynchophylline also has shown to inhibit platelet aggregation and thrombosis. It may also prevent blood clots in blood vessels and relax the blood vessels of endothelial cells, dilate peripheral blood vessels, lower the heart rate, and lower blood cholesterol.[49,50] Some of the newer research indicates that cat's claw might be helpful to people with Alzheimer's disease which could be attributable to the antioxidant effects already confirmed or, possibly, the dilation of peripheral blood vessels in the brain by alkaloids such as rhynchophylline.[51,52]

In herbal medicine today, cat's claw is employed around the world for many different conditions including immune disorders, gastritis, ulcers, cancer, arthritis, rheumatism, rheumatic disorders, neuralgias, chronic inflammation of all kinds, and such viral diseases as herpes zoster (shingles). Dr. Brent Davis, D.C., refers to cat's claw as the "opener of the way" for its ability to cleanse the entire intestinal tract and its effectiveness in treating stomach and bowel disorders (such as Crohn's disease, leaky bowel syndrome, ulcers, gastritis, diverticulitis, and other inflammatory conditions of the bowel, stomach, and intestines). Dr. Julian Whitaker, M.D., reports using cat's claw for its immune-stimulating effects, for cancer, to help prevent strokes and heart attacks, to reduce blood clots, and for diverticulitis and irritable bowel syndrome.

The most common forms used today are cat's claw capsules and tablets, which have become widely available in most health food stores at reasonable prices. There are also newer (and more expensive) proprietary extracts of cat's claw in tablets and capsules—some backed by research (albeit paid-for research). A good-quality, natural cat's claw vine bark with naturally-occurring chemicals is the best value, money-wise. It contains all the natural chemicals that nature provides in the proper ratio (including immune stimulating alkaloids, anti-inflammatory sterols and antioxidant glycosides) without laboratory adulteration. These invasive techniques may only extract one particular type of chemical, or change the complex ratio of naturally-occurring chemicals in herbal systems—which ignores the time-honored indigenous efficiency and synergy of the plant.

As the market demand has increased for this rainforest plant over the last five years, more companies have gone into the business of harvesting it and the quality of the bulk materials coming in from South America can be sometimes questionable. Oftentimes, a combination of both *U. tomentosa* and *U. guianensis* is harvested and sold as "cat's claw" (as, presently, the *guianensis* species is found more easily). Pick a good quality and trusted label and manufacturer for the best results and the best value.

Documented Properties and Actions: Analgesic, anti-inflammatory, antimutagenic, antioxidant, antiproliferative, antitumorous, antiviral, cytoprotective, cytostatic, cytotoxic, depurative, diuretic, hypotensive, immunostimulant, immunomodulatory

Phytochemicals: Ajmalicine, akuammigine, campesterol, catechin, chlorogenic acid, cinchonain, corynantheine, corynoxeine, daucosterol, epicatechin, harman, hirsuteine, hirsutine, iso-pteropodine, loganic acid, lyaloside, mitraphylline, oleanolic acid, palmitoleic acid, procyanidins, pteropodine quinovic acid glycosides, rhynchophylline, rutin, sitosterols, speciophylline, stigmasterol, strictosidines, uncarine A thru F, vaccenic acid

Traditional Remedy: For general immune and health benefits, practitioners usually recommend 500 mg to 1 g daily of vine powder in tablets or capsules. Therapeutic dosages of cat's claw are reported to be as high as 10 g daily. Generally, as a natural aid for arthritis, bowel, and digestive problems 3–5 g daily is recommended if a good product is obtained. Alternatively, a standard vine bark decoction can be used as

well much the same way in indigenous people of the Amazon use it. Dosages for a standard decoction for general health and maintenance is 1/2–1 cup of a decoction once daily and up to 1 cup three times daily in times of special needs. Adding lemon juice or vinegar to the decoction when boiling will help extract more alkaloids and less tannins from the bark. Use about 1/2 teaspoon of lemon juice or vinegar per cup of water. For standardized and/or proprietary extract products, follow the label instructions.

Contraindications: Cat's claw has been clinically documented with immunostimulant effects and is contraindicated before or following any organ or bone marrow transplant or skin graft.

Cat's claw has been documented with antifertility properties and is contraindicated in persons seeking to get pregnant (this effect however has *not* been proven to be sufficient to be used as a contraceptive and should not be relied on for such).

Cat's claw has been documented with chemicals which can reduce platelet aggregation and thin the blood. Check with your doctor first if you are taking coumadin or other blood thinning drugs and discontinue use one week to ten days prior to any major surgical procedure.

Two alkaloids in cat's claw have been documented with hypotensive properties. Persons with low blood pressure or taking antihypertensive drugs should check with their doctor prior to taking this plant and use with caution. It's best to monitor blood pressure levels accordingly as medications may need adjusting in some individuals depending on the amount of cat's claw taken.

Cat's claw requires sufficient stomach acid to help break down the tannins and alkaloids during digestion and to aid in absorption. Avoid taking bark capsules or tablets at the same time as antacids. Avoid taking high tannin (dark colored) liquid extracts directly by mouth and dilute first in water or acidic juice.

Large dosages of cat's claw (3–4 gram dosages at a time) have been reported to cause some abdominal pain or gastrointestinal problems including diarrhea (due to the tannin content of the vine bark). The diarrhea or loose stools tend to be mild and go away with continued use. Discontinue use or reduce dosage if diarrhea persists longer than 3–4 days.

Drug Interactions: Due to its immunostimulant effects, cat's claw should not be used with medications intended to suppress the immune system, such as cyclosporin or other medications prescribed following an organ transplant. (This theory has not been proven scientifically.)

Based upon *in vivo* rat studies, cat's claw may protect against gastrointestinal damage associated with nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen.

May potentiate coumadin and blood-thinning drugs.

May potentiate antihypertensive drugs.

WORLDWIDE ETHNOBOTANICAL USES

Country	Uses
Colombia	Dysentery, gonorrhea
Guiana	Dysentery
Peru	Abscesses, AIDS, arthritis, anti-inflammatory, asthma, blood cleanser, "bone pains," cancer, cicatrizant, cirrhosis, contraceptive, cytostatic, diabetes, diarrhea, disease prevention, dysentery, fevers, gastric ulcers, gastritis, gonorrhea, hemorrhages, herpes, immune disorders, inflammations, intestinal affections, kidney cleanser, menstrual irregularity, prostatitis, rheumatism, skin disorders, stomach, ulcers, urinary tract disorders, tumors, wounds
Suriname	Dysentery, intestinal affections, wounds

References

1. Cabieses, Fernando. *The Saga of the Cat's Claw*. Lima: Via Lactera Editores, 1994.
2. Immodal Pharmaka, GmbH., "Krallendorn® *Uncaria tomentosa* (Willd.) DC Root Extract. Information for Physicians, and Dispensing Chemists. 3d rev. ed." Volders, Austria: September 1995, 20 pages.
3. Keplinger, U. M. "Einfluss von Krallendorn extract auf Retrovirale Infektioned," Zurcher AIDS Kongress. Zurich, Switzerland, October 16 and 17, 1992, program and abstracts.
4. Keplinger, U. M., "Therapy of HIV-infected individuals in the pathological categories CDC Al and CDC B2 with a preparation containing IMM-207," IV. Osterreichicher AIDS-Kongress, Vienna, Austria, September 17 and 18, 1993, abstracts: 45.
5. Keplinger, H., et al. "Oxindole alkaloids having properties stimulating the immunologic system and preparation containing same." United States patent 5,302,611; April 12, 1994.
6. Keplinger, H., et al. "Oxindole alkaloids having properties stimulating the immunologic system and preparation containing the same." United States patent 4,940,725; July 10, 1990.
7. Keplinger, H., et al. "Oxindole alkaloids having properties stimulating the immunologic system and preparation containing the same." United States Patent 4,844,901; July 4, 1989.
8. Keplinger, H., et al. "Process for the production of specific isomer mixtures from oxindole alkaloids." United States Patent 5,723,625; March 3, 1998.
9. Montenegro de Matta, S., et al. "Alkaloids and procyanidins of an *Uncaria* sp. from Peru." *Il. Farmaco. Ed. Sc.* 1976; 31: 527–35.
10. Ozaki, Y., et al. "Pharmacological studies on Uncaria and Amsonia alkaloids." *Japanese Journal of Pharmacology* (suppl.) 1980; 30: 137pp.
11. Kreutzkamp, B. "Niedermolekulare Inhalstoffe mit Immunstimulierenden Eigenschaften aus Uncaria tomentosa, Okoubaka aubrevillei und anderen Drogen." Dissertation of the faculty of chemistry and pharmacy of Ludwig Maximilians University, Munich, May 1984.
12. Stuppner, H., et al. "HPLC analysis of the main oxindole alkaloids from *Uncaria tomentosa*." *Chromatographia* 1992; 34(11/12): 597–600.
13. Wagner, H., et al. "Die Alkaloide von *Uncaria tomentosa* und ihre Phagozytose-steigernde Wirkung." *Planta Medica* 1985; 51: 419–23.
14. Laus, G., et al. "Separation of sterioisomeric oxindole alkaloids from *Uncaria tomentosa* by high performance liquid chromatography." *J. of Chromatography* 1994*;* 662: 243–49.
15. Lavault, M., et al. "Alcaloides de l'*Uncaria guianensis*." *Planta Medica* 1983; 47: 244–45.
16. Hemingway, S. R. and J. D. Phillipson. "Alkaloids from South American species of *Uncaria* (Rubiaceae)." *J. Pharm. Pharmacol.* 1974 suppl.; 26: 113p.
17. Lemaire, I., et al. "Stimulation of interleukin-1 and -6 production in alveolar macrophages by the neotropical liana, *Uncaria tomentosa* (*uña de gato*)." *J. Ethnopharmacol.* 1999; 64(2): 109–15.
18. Marina, M. D., "Evaluacion de la actividal immunoestimulante de *Uncaria tomentosa* (Willd.) DC. Uña de gato en ratones albinos." *Biodiversidad Salud* 1998; 1(1): 16–19.
19. Sheng Y, et al., "Treatment of chemotherapy-induced leukopenia in a rat model with aqueous extract from *Uncaria tomentosa*." *Phytomedicine* 2000; 7(2): 137–43.
20. Sheng, Y., et al., "Enhanced DNA repair, immune function and reduced toxicity of C-Med-100, a novel aqueous extract from *Uncaria tomentosa*." *J. Ethnopharmacol.* 2000; 69(2): 115–26.
21. Sheng, Y., et al., "DNA repair enhancement of aqueous extracts of *Uncaria tomentosa* in a human volunteer study." *Phytomedicine* 2001; 8(4): 275–82.
22. Lamm, S., et al, "Persistent response to pneumococcal vaccine in individuals supplemented with a novel water soluble extract of *Uncaria tomentosa*, C-Med-100." *Phytomedicine* 2001; 8(4): 267–74.
23. Gotuzzo, E., et al. "En marcha seria investigacion: Uña de gato y pacientes con el VIH." *De Ciencia y Tecnologia* 1993; 34.
24. Inchaustegui and Gonzales, R. "Estudio preliminar sobre. CAS y SIDA." Utilizando Plantas Medicinales, Anos 1989–1994, Hospital IPSS, Iquitos, Peru. Iquitos, Peru: Hospital del Instituto Peruano de Seguridad Social Iquitos Comite ETS-SIDA, February 1993, 24 pp.
25. Stuppner, H., et al. "A differential sensitivity of oxindole alkaloids to normal and leukemic cell lines." *Planta Medica* (1993 suppl.); 59: A583.
26. Peluso, G., et al. "Effetto antiproliferativo su cellule tumorali di estrattie metaboliti da Uncaria tomentosa. Studi in vitro sulla loro azione DNA polimerasi." 11 Congreso Italo-Peruano de Etnomedicina Andina, Lima, Peru, October 27–30, 1993, 21–2.
27. Rizzi, R., et al. "Mutagenic and antimutagenic activities of Uncaria tomentosa and its extracts." Premiere Colloque Européan d'Ethnopharmacologie, Metz, France, March 22–24, 1990.
28. Rizzi, R., et al. "Bacterial cytotoxicity, mutagenicity and antimutagenicity of *Uncaria tomentosa* and its extracts. Antimutagenic activity of *Uncaria tomentosa* in humans." Premiere Colloque Européan d'Ethnopharmacologie, Metz, France, March 22–24, 1990.
29. Rizzi, R., et al. "Mutagenic and antimutagenic activities of *Uncaria tomentosa* and its extracts." *J.*

Ethnopharmacol. 1993; 38: 63–77.
30. Muhammad, I., et al. “Investigation of Uña de Gato I. 7-Deoxyloganic acid and 15N NMR spectroscopic studies on pentacyclic oxindole alkaloids from *Uncaria tomentosa*.” *Phytochemistry.* 2001; 57(5): 781–5.
31. Riva, L., et al. “The antiproliferative effects of *Uncaria tomentosa* extracts and fractions on the growth of breast cancer cell line.” *Anticancer Res.* 2001; 21(4A): 2457–61.
32. Salazar, E. L., et al. “Depletion of specific binding sites for estrogen receptor by *Uncaria tomentosa*.” *Proc. West. Pharmacol. Soc*. 1998; 41(1): 123–124.
33. Sheng, Y., et al. “Induction of apoptosis and inhibition of proliferation in human tumor cells treated with extracts of *Uncaria tomentosa*.” *Anticancer Res*. 1998; 18(5A): 3363–68.
34. Yepez, A. M., et al. “Quinovic acid glycosides from *Uncaria guianensis*.” *Phytochemisty* 1991; 30: 1635–37.
35. Aquino, R., et al. “Plant metabolites. New compounds and anti-inflammatory activity of *Uncaria tomentosa*.” *J. Nat. Prod.* 1991*;* 54: 453–59.
36. Aquino, R., et al. “New polyhydroxylated triterpenes from *Uncaria tomentosa*.” *J. Nat. Prod.* 1990: 559–64.
37. Cerri, R., et al. “New quinovic acid glycosides from *Uncaria tomentosa*.” *J. Nat. Prod.* 1988*;* 51: 257–61.
38. Yasukawa, K., et al. “Effect of chemical constituents from plants on 12-O-tetradecanoylphorbol-13-acetate-induced inflammation in mice.” *Chemical and Pharmaceutical Bulletin* 1989*;* 37: 1071–73.
39. Recio, M. C., et al. “Structural requirements for the anti-inflammatory activity of natural triterpenoids.” *Planta Medica* 1995; 61(2): 182–85.
40. Sandoval-Chacon, M., et al. “Anti-inflammatory actions of cat’s claw: the role of NF-kappaB.” *Aliment. Pharmacol. Ther.* 1998; 12(12): 1279–89.
41. Aguilar, J. L., et al. “Anti-inflammatory activity of two different extracts of *Uncaria tomentosa* (Rubiaceae).” *J. Ethnopharmacol.* 2002; 81(2): 271–76.
42. Fazzi, Marco A. Costa. “Evaluation de l'*Uncaria tomentosa* (Uña de gato) en lan prevencion de ulceras gastricas de stress producidas experimentalmente en rats.” Dissertation of the faculty of medicine, University Peruana Cayetano Heredia, Lima, Peru, 1989.
43. Desmarchelier, C., et al. “Evaluation of the *in vitro* antioxidant activity in extracts of *Uncaria tomentosa* (Willd.) DC.” *Phytother. Res.* 1997; 11(3): 254–256.
44. Sandoval, M., et al. “Cat’s claw inhibits TNFalpha production and scavenges free radicals: role in cytoprotection.” *Free Radic. Biol. Med*. 2000; 29(1): 71–8.
45. Sandoval, M., et al., “Anti-inflammatory and antioxidant activities of cat’s claw (*Uncaria tomentosa* and *Uncaria guianensis*) are independent of their alkaloid content.” *Phytomedicine* 2002; 9(4): 325–37.
46. Mur, E., et al. “Randomized double blind trial of an extract from the pentacyclic alkaloid-chemotype of Uncaria tomentosa for the treatment of rheumatoid arthritis. *J. Rheumatol*. 2002 Apr; 29(4): 678–81.
47. Aquino, R., et al. “Plant metabolites. Structure and *in vitro* antiviral activity of quinovic acid glycosides from *Uncaria tomentosa* and *Guettarda platypoda*.” *J. Nat. Prod*. 1989; 4(52): 679–85.
48. Yano, S., et al. “Ca2, channel-blocking effects of hirsutine, an indole alkaloid from *Uncaria* genus, in the isolated rat aorta.” *Planta Medica* 1991; 57: 403–5.
49. Chan-Xun, C., et al. “Inhibitory effect of rhynchophylline on platelet aggregation and thrombosis.” *Acta Pharmacologica Sinica* 1992; 13(2): 126–30.
50. Jin, R. M., et al. “Effect of rhynchophylline on platelet aggregation and experimental thrombosis." *Acta Pharmacologica Sinica* 1991; 25: 246–49.
51. Mohamed, A. F., et al. “ Effects of Uncaria tomentosa total alkaloid and its components on experimental amnesia in mice: elucidation using the passive avoidance test.” *J. Pharm. Pharmacol*. 2001; 52(12): 1553–61.
52. Castillo, G., et al. “Pharmaceutical compositions containing *Uncaria tomentosa* extract for treating Alzheimer’s disease and other amyloidoses.” *Patent-Pct. Int. Paol.* 1998; 00 33,659: 67pp.

Ethnomedical Information on Cat's Claw (Uncaria tomentosa)

Part Used / Where	Documented Ethnic Use	Type Extract / Route	Used For	Ref #
Vine Colombia	Used to treat gonorrhea and dysentery.	Not stated / Oral	Human Adult	ZZ1005 L04137
Bark Peru	Used for prostatitis, tumors, AIDS, rheumatism, diabetes and arthritis. Used as a anti-inflammatory and contraceptive.	Decoction / Oral	Human Adult	L04137
Bark Peru	Used for rheumatism, infections, and cancer.	Infusion / Oral	Human Adult	J13160
Bark Peru	Used for wounds and tumors.	Decoction / External	Human Adult	J12291
Bark Peru	Used as an anti-inflammatory.	Decoction / Oral	Human Adult	K27875
Bark Peru	Used as an anti-inflammatory.	Bark / Oral	Human Adult	L03868
Root Peru	Used to cause sterility in females.	Decoction / Oral	Human Female	AL1036
Bark Peru	Used to treat asthma, inflammations of the urinary tract, to recover from childbirth, as a kidney cleanser, and for bone pain and gastric ulcers.	Not stated / Oral	Human Adult	ZZ1041 ZZ1027
Bark Peru	Used for urinary tract cancer in women, cirrhosis and gastritis.	Not stated / Oral	Human Adult	ZZ1027 L04137 AL1025
Bark Peru	Used to normalize the body and cleanse the system, for fevers, abscesses, hemorrhages, impurities of the skin, as a blood cleanser and for irregularity of the menstrual cycle.	Not stated / Oral	Human Adult	AL1037
Rootbark Peru	Used to treat cancer and arthritis.	Decoction / Oral	Human Adult	K08663
Rootbark Peru	Used to treat intestinal disorders, arthritis and cancer.	Infusion / Oral	Human Adult	K17909
Bark Peru	Used to treat immune disorders, AIDS, cancer. Considered an anti-inflammatory, cicatrizant, antacid, and a cellular reconstituent.	Not stated / Oral	Human Adult	ZZ1084

Presence of Compounds in Cat's claw (Uncaria tomentosa)

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Ajmalicine, iso	Indole alkaloid	Leaf	Peru	00.031%	J10803
Akuammigine	Indole alkaloid	Leaf Root	Peru Peru	00.92% 00.03%	J10803 J10803
Campesterol	Steroid	Bark	Peru	Not stated	M25334
Catechin, epi: (-):	Flavonoid	Bark	Peru	00.0025%	J13160
Chlorogenic acid	Phenylpropanoid	Bark	Peru	Not stated	K29900
Cinchonain I-A	Flavonoid	Bark	Peru	00.0025%	J13160
Cinchonain I-B	Flavonoid	Bark	Peru	00.0065%	J13160
Corynantheine, dihydro:	Indole alkaloid	Leaf Root	Peru Peru	00.08% 00.071%	J10803 J10803
Corynoxeine	Indole alkaloid	Leaf Root	Peru Peru	00.019% 00.051%	J10803 J10803
Corynoxeine, iso:	Indole alkaloid	Vine Leaf Root	Peru Peru Peru	00.0018% 00.06% 00.095%	L17978 J10803 J10803
Daucosterol	Steroid	Bark	Peru	00.006%	H28081
Epicatechin	Polyphenolic	Not stated	Peru	Not stated	AL1024
Harman	Indole alkaloid	Vine	Peru	00.0008%	L17978
Hirsuteine	Indole alkaloid	Leaf Root	Peru Peru	00.014% 00.019%	J10803 J10803
Hirsutine	Indole alkaloid	Leaf Root	Peru Peru	00.033% 00.08%	J10803 J10803

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Loganic acid, 7-deoxy:	Monoterpene	Bark	Peru	00.0032%	H28081
Lyaloside	Indole alkaloid	Stem	Peru	00.0007%	H26768
Mitraphylline	Indole alkaloid	Vine	Peru	00.014%	L17978
		Rootbark	Peru	Not stated	K08663
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Root	Peru	Not stated	K24754
		Stembark	Peru	Not stated	L15562
		Stembark	Peru	Not stated	L03706
		Not stated	Peru	Not stated	L08117
		Rootbark	Peru	Not stated	K16523
		Rootbark	Peru	Not stated	K17909
		Bark	Peru	00.02%	H28081
		Leaf	Peru	01.09%	J10803
		Root	Peru	00.5%	J10803
		Twig bark	Peru	00.05%	J10803
		Stembark	Peru	00.003%	J10803
		Root	Peru	00.00067%	M12822

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Mitraphylline, iso	Indole alkaloid	Rootbark	Peru	Not stated	K17909
		Rootbark	Peru	Not stated	K08663
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Root	Peru	Not stated	K24754
		Stembark	Peru	Not stated	L15562
		Stembark	Peru	Not stated	L03706
		Not stated	Peru	Not stated	L08117
		Bark	Peru	00.0072%	H28081
		Vine	Peru	00.074%	L17978
		Rootbark	Peru	Not stated	K16523
		Leaf	Peru	02.5%	J10803
		Root	Peru	00.33%	J10803
		Root	Peru	00.002%	J10803
		Vine	Peru	00.00129%	M12822
		Not stated	Peru	Not stated	AL1024
Oleanolic acid	Triterpene	Rootbark	Not stated	00.01%	M27076
		Rootbark	Not stated	00.015%	M27076
Palmitoleic acid	Lipid	Seed Oil	Not stated	Not stated	AL1010A
Procyanidin A1	Procyanidin	Not stated	Peru	Not stated	AL1024
Procyanidin B1	Procyanidin	Not stated	Peru	Not stated	AL1024
Procyanidin B2	Procyanidin	Not stated	Peru	Not stated	AL1024
Procyanidin B4	Procyanidin	Not stated	Peru	Not stated	AL1024

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Pteropodine	Indole alkaloid	Rootbark	Peru	Not stated	K08663
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Rootbark	Peru	Not stated	K16523
		Root	Peru	00.48%	K24754
		Leaf	Peru	Not stated	J10803
		Rootbark	Peru	Not stated	K17909
		Stembark	Peru	Not stated	L15562
		Stembark	Peru	Not stated	L03706
		Not stated	Peru	Not stated	L08117
		Vine	Peru	00.078%	L17978
		Vine	Peru	00.56%	J10803
		Root	Peru	00.3%	J10803
		Twig bark	Peru	00.005%	J10803
		Root	Peru	00.00032%	M12822
Pteropodine, iso	Indole alkaloid	Not stated	Japan	Not stated	AL1002
		Not stated	Peru	Not stated	AL1024
Quinovic acid,27-beta-d-glucopyranosyl: 3-o-alpha-rhamnopyranosyl (1-3)-glucopyranosyl:	Triterpene	Rootbark	Peru	00.001%	H21551
Quinovic acid,27-o-beta-d-glucopyranoside	Triterpene	Rootbark	Peru	00.00087%	H21551
Quinovic acid-(28-1)-beta-d-glucosy l-beta-d-glucosyl ester	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-(beta-d-fucosyl)-(28-1)-beta-d- glucosyl ester	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-(beta-d-gluc opyranosyl (1-3)beta d-fucopyranosyl) (27-1)-beta-d-glucopyranosyl ester	Triterpene	Bark	Peru	00.00200%	M16037
Quinovic acid-3-beta-o-(beta-d-glucopyranosyl(1-3) beta-d-fucopyanosyl)-(28-1)-beta-d-glucopyranosyl ester	Triterpene	Bark	Peru	00.00500%	M16037

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Quinovic acid-3-beta-o-(beta-d-glucopyranosyl(1-3) beta-d-fucopyranoside)	Triterpene	Bark	Peru	00.00460%	M16037
Quinovic acid-3-beta-o-(beta-d-glucosyl-(1-3) beta-d-fucoside	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-(beta-d-glucosyl-(1-3)- beta-d-fucosyl)-(27-1)-b eta-d-glucosyl ester	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-(beta-d-glucosyl-(1-3)-beta-d-fucosyl)-(28-1)-b eta-d-glucosyl ester	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-(beta-d-quinovosyl)-(28-1)-beta-d-glucosyl ester	Triterpene	Bark	Peru	Not stated	H05466
Quinovic acid-3-beta-o-alpha-l-rhamnopyranoside	Triterpene	Rootbark	Peru	00.00171%	H21551
Quinovic acid-3-beta-o-alpha-l-rhamnopyranosyl(1-3)-glucopyranosyl	Triterpene	Rootbark	Peru	00.00175%	H21551
Quinovic acid-3-beta-o-beta-d-fucos yl-27-beta-d-glucosyl ester	Triterpene	Rootbark	Not stated	00.016%	M27076
Quinovic acid-3-beta-o-beta-d-quinovopyranosyl(1-3)-galactopyranosyl	Triterpene	Rootbark	Peru	00.0007%	H21551
Quinovic acid-3-beta-o-beta-d-quinovopyranosyl(1-3)-glucopyranosyl	Triterpene	Rootbark	Peru	00.0007%	H21551
Quinovic acid-3-beta-o-beta-d-quino vosyl-27-beta-d-glucosyl ester	Triterpene	Rootbark	Not stated	00.015%	M27076
Quinovic acid-3-beta-o-beta-d-quinovopyranoside	Triterpene	Not stated	Peru	Not stated	AL1025
Quinovic acid 3-beta-o-beta-d-fucopyranoside	Triterpene	Not stated	Peru	Not stated	AL1025
Rhynchophylline	Indole alkaloid	Vine Root Rootbark Leaf Root Root	Peru Peru Peru Peru Peru Peru	00.0096% Not stated Not stated 00.77% 01.03% 00.00233%	L17978 K24754 K16523 J10803 J10803 M12822

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Rhynchophylline, iso	Indole alkaloid	Root	Peru	Not stated	K24754
		Vine	Peru	00.103%	L17978
		Bark	Peru	00.004%	H28081
		Rootbark	Peru	Not stated	K16523
		Leaf	Peru	02.22%	J10803
		Root	Peru	02.16%	J10803
		Root	Peru	00.00455%	M12822
Rutin	Flavonol	Bark	Peru	Not stated	K29900
Sitosterol, beta:	Steroid	Bark	Peru	Not stated	M25334
Speciophylline	Indole alkaloid	Stembark	Peru	Not stated	L15562
		Stembark	Peru	Not stated	L03706
		Not stated	Peru	Not stated	L08117
		Rootbark	Peru	Not stated	K16523
		Leaf	Peru	01.08%	J10803
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Rootbark	Peru	Not stated	K08663
		Rootbark	Peru	Not stated	K17909
		Root	Peru	00.66%	J10803
		Twig bark	Peru	00.16%	J10803
		Stembark	Peru	00.008%	J10803
Stigmasterol	Steroid	Bark	Peru	Not stated	M25334
Strictosidine, 3-4-dehydro:5-carboxy	Indole alkaloid	Stem	Peru	00.0018%	H26768
		Not stated	Peru	Not stated	AL1001
Strictosidine, 5(s)-carboxy	Indole alkaloid	Stem	Peru	00.0014%	H26768
Strictosidine, 5-alpha-carboxy	Indole alkaloid	Rootbark	Not stated	00.0255%	M27076
Compound	**Chemical Type**	**Plant Part**	**Origin**	**Quantity**	**Ref #**

Uncarine	Indole alkaloid	Stembark	Peru	Not stated	L03706
Uncarine A	Indole alkaloid	Bark	Peru	00.009%	H28081
Uncarine D	Indole alkaloid	Bark	Peru	00.0032%	H28081
Uncarine E	Indole alkaloid	Rootbark	Peru	Not stated	K17909
		Rootbark	Peru	Not stated	K08663
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Rootbark	Peru	Not stated	K16523
		Root	Peru	Not stated	K24754
		Bark	Peru	00.02%	H28081
		Leaf	Peru	00.31%	J10803
		Stembark	Peru	Not stated	L15562
		Stembark	Peru	Not stated	L03706
		Not stated	Peru	Not stated	L08117
		Vine	Peru	00.245%	L17978
		Vine	Peru	00.28%	J10803
		Root	Peru	00.063%	J10803
		Twig bark	Peru	00.006%	J10803
		Root	Peru	00.00193%	M12822

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Uncarine F	Indole alkaloid	Not stated	Peru	Not stated	L08117
		Stembark	Peru	Not stated	L15562
		Rootbark	Peru	Not stated	K16523
		Rootbark	Peru	Not stated	K17909
		Leaf	Peru	00.28%	J10803
		Rootbark	Peru	Not stated	K08663
		Vine	Peru	00.0075%	L17978
		Rootbark	Peru	Not stated	K09265
		Rootbark	Peru	Not stated	K09773
		Root	Peru	00.31%	J10803
		Twig bark	Peru	00.063%	J10803
		Stembark	Peru	00.003%	J10803
Urs-12-en-23-al-28-oic acid,3-beta-19-alpha-dihydroxy-6-oxo:	Triterpene	Stembark	Peru	00.00092%	H25490
		Stembark	Peru	00.001005%	H25490
Urs-12-en-23-al-28-oic acid,3-beta-	Triterpene	Stembark	Peru	00.00058%	H25490
Urs-12-en-27-28-dioic acid,3-beta-h ydroxy-3-oxo:	Triterpene	Rootbark	Peru	00.00055	H21551
Urs-12-en-28-oic acid,23-nor: 24-exomethylene- 3-beta-6-beta-19-alpha-trihydroxy:	Triterpene	Bark	Peru	00.00334%	M23460
Urs-12-en-28-oic acid,3-beta-6-beta-19-alpha- 23-tetrahydroxy:	Triterpene	Rootbark	Peru	00.0012%	H21551
Urs-12-en-28-oic acid,3-beta-6-beta-19-alpha-trihydroxy- 23-oxo:	Triterpene	Bark	Peru	00.00574%	M23460
Urs-12-en-28-oic acid,3-beta-6-beta -19-alpha-trihydroxy:	Triterpene	Bark	Peru	00.0065%	M23460
		Stembark	Peru	00.01270%	H25490
		Rootbark	Not stated	00.01965%	M27076
		Rootbark	Not stated	00.025%	M27076
Urs-12-en-28-oic acid,6-beta-19-alp ha-dihydroxy-3-oxo:	Triterpene	Rootbark	Peru	00.00155	H21551

Compound	Chemical Type	Plant Part	Origin	Quantity	Ref #
Urs-12-ene-23-28-dioic acid,3-beta-6-beta-19- alpha- trihydroxy: methyl ester	Triterpene	Rootbark	Not stated	00.0008%	M27076
Ursa-12-19(29)-dien-27-28-dioic aci d,16-alpha- hydroxy-3-beta-methoxy	Triterpene	Rootbark	Peru	00.0008%	H21551
Vaccenic acid, cis	Lipid	Seed Oil	Not stated	Not stated	AL1010A

Biological Activities for Extracts of Cat's claw (Uncaria tomentosa)

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Peru	Toxic Effect (general)	Lyophilized Extract	Oral Human Adult	10.0 gm	Inactive		L03092
Bark Peru	Toxicity Assessment (quantitative)	Lyophilized Extract	Intragastric Rat	0.2 gm/kg	Inactive	Extract was administered for 30 days.	L03092
Bark Peru	Toxicity Assessment (quantitative)	Lyophilized Extract	IP Rat	LD50=0.431 gm/kg			L03092
Bark Peru	Toxic Activity	H2O Ext	Cell Culture	100.0 mg/ml	Inactive	Cells -(chinese hamster ovary)	L03617
Bark Peru	Mutagenic Activity	CHCL3 Ext CHCL3-MEOH(9:1) H2O Ext MEOH Ext Pet Ether Ext	Agar Plate	100.0 mcg	Inactive	*Salmonella typhimurium* (Strains:TA100, TA1535, TA1537, TA98, TA1538)	K10349
Bark Peru	Mutagenic Activity	H2O Ext	Agar Plate	100.0 mg/ml	Inactive	vs. Ames test.	L03617
Bark Peru	Immunostimulant Activity	Lyophilized Extract	Intragastric Mouse	400.0 mg/kg	Active	Activated phagocytosis as measured by the carbon clearance test.	L03088
Bark Peru	Immunostimulant Activity	Hot H2O Ext	Oral Rat	Variable	Active	Water extracts shown to increase white blood cells and have enhanced DNA repair.	L08117
Root Peru	Immunostimulant Activity	H2O Ext	Human Adult	Not stated	Active	Increased IG levels in melanoma patients.	T04747
Root Peru	Immunstimulant Activity	Alkaloid Fraction	Cell Culture	Not stated	Active	vs .tissue macrophages. Released a lymphocyte-proliferation regulating factor enhancing the proliferation of B and T lymphocytes.	K24085

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Stembark Peru	Immunostimulant Activity	H2O Ext	Rat macrophages	0.05 mg/ml	Active	Stimulated Interleukin-1 and Interleukin-6 formation	L03706
Vine Peru	Immunostimulant Activity	H2O Ext	Intragastric Rat	Variable	Active	Stimulated lymphocyte proliferation. White blood cells were elevated compared with Controls ($p<0.05$).	L06405
Vine Peru	Immunostimulant Activity	H2O Ext	Oral Human Adult (Male)	5.0 mg/kg	Active	WBC were significantly elevated ($p<0.05$).	L06405
Vine Peru	Immunostimulant Activity	H2O Ext	Oral Human Adult (male)	700 mg	Active	vs. response to 23 valent pneumococcal vaccine. Immune enhancement observed with an elevation of lymphocyte/ neutrophil ratios and a reduced decay in the 12 serotype antibody titer responses to the vaccination at 5 months.	AL1009
Vine Peru	Immunostimulant Activity	H2O Ext	Oral Human Adult	250 mg 350 mg	Active Active	PHA-induced lymphocyte proliferation.	AL1011
Root Peru	Cytotoxic Activity	H2O Ext	Cell Culture	IC50=200.0 mcg/ml	Weak activity	vs. EBV-transformed B lymphoma cells (raji).	J18471
Root Peru	Cytotoxic Activity	H2O Ext	Cell Culture	IC50=71.0 mcg/ml	Active	vs. cell line k562.	J18471
Root Peru	Cytotoxic Activity	H2O Ext	Cell Culture	IC50=84.0 mcg/ml	Active	Human leukemia cell line HL-60-TB.	J18471
Bark Peru	Apoptosis Inhibition	H2O Ext	Cell Culture	100.0 mcg/ml	Active	Human colon cancer cell line HT29. vs. peroxynitrite- induced apoptosis.	L04246
Bark Peru	Apoptosis Inhibition	H2O Ext	Cell Culture	MLD=100.0 mcg/ml	Active	Macrophage cell line raw 264.7. vs. peroxynitrite-induced apoptosis.	L04246
Bark + Leaf Peru	Antiproliferative Activity	Ext and an isolated active fractions	Cell culture (MCF7)	IC50=10 mg/ml IC50=20 mg/ml	Active	Inhibited proliferation of the human breast cancer cell line MCF7.	AL1007

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark + Leaf Peru	Antiproliferative Activity	Ext and an isolated active fractions	Cell culture (MCF7)	100 mg/ml	Strong Activity	Approximately 90% inhibition of human breast cancer cell line MCF7.	AL1007
Bark Peru	Estrogen Binding Inhibition	H2O Ext	Cell Culture	10.0 mcg 20.0 mcg	Active	Human-breast cancer (UISO-BCA-1) A significant reduction of estradiol-specific binding was observed.	L06750
Bark Peru	Tumor Necrosis Factor Synthesis Inhibition	H2O Ext	Cell Culture	ED50=150.0 mcg/ml	Active	Macrophage cell line raw 264.7.	L12755
Bark Peru	Genotoxicity Activity	Not stated	Infusion Rat (Liver)	100.0 mcg/ml	Active	vs. oxidative DNA damage induced by Fe2+ salts.	K29288
Root Peru	Genotoxicity Activity	Not stated	Infusion Rat (Liver)	100.0 mcg/ml	Active	vs. oxidative DNA damage induced by Fe2+ salts.	K29288
Bark Peru	Gene Expression Inhibition	H2O Ext	Cell Culture	100.0 mcg/ml	Active	Human colon cancer cell line HT29. Inhibited lPS-induced nitric oxide synthase gene expression.	L04246
Bark Peru	DNA Repair Synthesis Stimulation	Hot H2O Ext	Oral Rat	80.0 mg/kg	Active	Increased white blood cells and enhanced DNA repair.	L08117
Bark Peru	DNA Binding Effect	ETOH(70%)Ext	Not stated	0.5 mg/ml	Weak activity	DNA-calf thymus	K27875
Root Peru	DNA Synthesis Inhibition	H2O Ext	Cell Culture	Not stated	Active	Sarcoma 180(asc). A tannin-free extract was used.	T04747
Vine Peru	DNA Repair Induction	H2O Ext	Intragastric Rat	Variable	Active	Repair of DNA single strand breaks and double strand breaks were significantly improved ($p<0.05$).	L06405
Bark Peru	DNA Repair Induction	H2O Ext	Oral Human Adult	Not stated	Active	Enhance DNA repair, mitogenic response and leukocyte recovery after chemotherapy-induced DNA damage.	AL1011
Bark Peru	DNA Repair Induction	H2O Ext	Oral Human Adult	250 mg 350 mg	Active Active	DNA damage-induced by hydrogen peroxide was significantly reduced with an increase in DNA repair.	AL1011

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Peru	Antimutagenic Activity	Decoction	Oral Human Adult	6.5 gm/day	Active	*Salmonella typhimurium* TA100. Two healthy donors, one a smoker and one not, were given extract for 15 days. Treatment decreased smokers urine's mutagenicity.	K10349
Bark Peru	Antimutagenic Activity	H2O Ext MEOH Ext	Agar Plate	100.0 mcg/ml	Active	*Salmonella typhimurium* TA102. vs. 8-methoxypsoralen + UVA-induced mutagenesis.	K10349
Bark Peru	Antimutagenic Activity	CHCL3-MEOH(9:1) Pet Ether Ext CHCL3 Ext	Agar Plate	100.0 mcg/ml	Weak activity	*Salmonella typhimurium* TA102. vs. 8-methoxypsoralen + UVA-induced mutagenesis.	K10349
Bark Peru	Analgesic Activity	Lyophilized Extract	Intragastric Mouse	10.0 mg/kg	Active		L03092
Bark Peru	Analgesic Activity	Lyophilized Extract	IV Infusion Mouse	10.0 mg/kg	Active		L03092
Bark Peru	Anti-inflammatory Activity	H2O Ext	Cell Culture	100.0 mcg/ml	Active	Macrophage cell line raw 264.7. Inhibited NF-kappa-B activation induced by LPS.	L04246
Bark Peru	Anti-inflammatory Activity	H2O Ext	Oral Rat	5.0 mg/ml	Active	vs. rats with chronic intestinal inflammation induced by indomethacin (7.5 mg/kg).	L04246
Bark Peru	Anti-inflammatory Activity	Lyophilized Extract	IP Mouse	10.0 gm/kg	Active	Inhibited inflammation by 70%.	L03092
Bark Peru	Anti-inflammatory Activity	Pet Ether Ext	IP Rat	Not stated	Active		M25334
Bark Peru	Anti-inflammatory Activity	Ext	Not stated	Not stated	Active		AL1007
Bark Peru	Anti-inflammatory Activity	Freeze-dried Ext	Human Adult (osteoarthritis)	Not stated	Active	Pain associated with activity, medical and patient assessment scores were reduced within 1 week of therapy.	AL1008
Bark Peru	Anti-inflammatory Activity	Freeze-dried Ext	Human Adult (osteoarthritis)	Not stated	Inactive	No effect on knee pain or swelling.	AL1008

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Peru	Anti-inflammatory Activity	Freeze-dried Ext	Cell Culture	Not stated	Active Active Inactive	Inhibited TNF-alpha production. Reduced LPS-induced PGE2 release. Basal PGE2 production.	AL1008
Root Peru	Anti-inflammatory Activity	H2O Ext	Gastric Intubation Mouse	Not stated	Active	vs. carrageenan-induced pedal edema. A tannin-free extract was used.	T04747
Root Peru	Anti-inflammatory Activity	H2O Ext	IP Mouse	Not stated	Active	vs. carrageenan-induced pedal edema. A tannin-free extract was used.	T04747
Rootbark Peru	Anti-inflammatory Activity	CHCL3 Ext	Intragastric Rat	Not stated	Inactive		M27076
Rootbark Peru	Anti-inflammatory Activity	CHCL3-MEOH (9:1)	Intragastric Rat	50.0 mg/kg	Active	vs. carrageenan-induced pedal edema. Edema was inhibited by 69.2%.	M27076
Rootbark Peru	Anti-inflammatory Activity	H2O Ext	Intragastric Rat	84.0 mg/kg	Active	vs. carrageenan-induced pedal edema. Edema was inhibited by 41.2%.	M27076
Rootbark Peru	Anti-inflammatory Activity	MEOH Ext	Intragastric * Rat	Not stated	Inactive		M27076
Bark Peru	Anti-inflammatory Activity	Not stated	Cell Culture	IC50=14.1 ng/ml	Active	Decreased TNF-alpha and nitrite production in LPS exposed cells.	AL1003
Bark Peru	Anti-inflammatory Activity	Not stated	Oral	Not stated	Active	Protected against indomethacin-induced gastritis model.	AL1003
Bark Peru	Anti-inflammatory Activity	Not stated	Oral	Not stated	Active	Prevented TNF-alpha mRNA expression.	AL1003
Bark Peru	Anti-inflammatory Activity	Hydroalcoholic Ext H2O-freeze dried Ext	Mouse	Not stated	Active Weak Activity	vs. carrageenan-induced paw edema.	AL1004
Bark Peru	Cyclooxygenase-1 and -2 Inhibition	Hydroalcoholic Ext H2O-freeze dried Ext	Mouse	Not stated	Inactive Inactive		AL1004

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Russia	Antioxidant Activity	Lyophilized Extract	Not stated	Not stated	Active		L02933
Bark Peru	Antioxidant Activity	Infusion	Rat (Liver)	IC50=56.0 mcg/ml	Active	vs. tert-butyl-hydroperoxide initatied chemiluminesence.	K29288
Root Peru	Antioxidant Activity	Infusion	Rat (Liver)	IC50=259.0 mcg/ml	Equivocal	vs. tert-butyl-hydroperoxide initatied chemiluminesence.	K29288
Bark Peru	Antioxidant Activity	H2O Ext	Not stated	IC50=202.9 mg/ml	Active		L03868
Bark Peru	Antioxidant Activity	MEOH Ext	Not stated	IC50=48.8 mg/ml	Active		L03868
Bark Peru	Antioxidant Activity	Not stated	Oral	Not stated	Active	Prevented apoptosis induced by indomethacin.	AL1003
Bark Peru	Antioxidant Activity	Decoction	Cell culture	Not stated	Active	Protective against peroxynitrite- and H2O2-induced oxidative stress.	AL1006
Bark Peru	Antioxidant Activity	Decoction	Cell culture	Not stated	Weak Activity	Decreased DPPH-induced apoptosis. Attenuated peroxynitrite- and H202-induced necrotic cell death.	AL1006
Bark Peru	Antioxidant Activity	H2O Ext	Cell Culture	ED50=28.0 ng/ml	Active	Macrophage cell. Line raw 264.7.	L12755
Bark Peru	Antialzheimer's Activity	Not stated	Human Adult	Not stated	Active	Possibly due to an antioxidant effect.	E01043
Bark Peru	Beta-glucuronidase Inhibition	ETOH(70%)Ext	Not stated	IC50=>10.0 mcg/ml	Active		K27875
Bark Peru	Prothrombin Time Increased	Not stated	Human Adult (Plasma)	10.0 mcl	Active		L13554
Bark Peru	Xanthine Oxidase Inhibition	ETOH(70%)Ext	Not stated	>50.0 mcg/ml	Inactive		K27875
Root Peru	Antifertility Effect	H2O Ext	Intragastric Mouse (female)	25.0 mg/kg	Active	A tannin-free extract was used.	T04747
Bark Peru	Antifertility Effect	H2O Ext	Intragastric Mouse (female)	6.25 mg/kg	Active	A tannin-free extract was used.	T04747

Part - Origin	Activity Tested For	Type Extract	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Bark Peru	Antibacterial Activity	H2O Ext	Agar Plate	100.0 mg/ml	Inactive	*Photobacterium phosphoreum*	L03617
Dried Stem Peru	Cytochrome P450 Inhibition	ETOH(100%)Ext	Cell Culture	IC50=0.79 mM	Active		L09661

Biological Activities for Compounds in Cat's claw (Uncaria tomentosa)

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Pteropodine	Muscarinic (M1) Receptor Modulation	Rat Xenopus oocytes	EC50=9.52 mM	Active	Produced a 2.7-fold increase in current response evoked by acetylcholine.	AL1002
Pteropodine	Serotonin Receptor Modulation	Rat Xenopus oocytes	EC50=13.5 mM	Active	Produced a 2.4-fold increase in current response evoked by serotonin.	AL1002
Pteropodine	Glutamate Receptor Modulation	Rat Xenopus oocytes	Not stated	Inactive		AL1002
Pteropodine Isopteropodine	Current Response Inhibition	Rat Xenopus oocytes	10 mM 10 mM	Active	Reduced EC(50) values of acetylcholine and serotonin that elicited current responses.	AL1002
Isopteropodine	Glutamate Receptor Modulation	Rat Xenopus oocytes	Not stated	Inactive		AL1002
Isopteropodine	Muscarinic (M1) Receptor Modulation	Rat Xenopus oocytes	EC50=9.92 mM	Active	Produced a 3.3-fold increase in current response evoked by acetylcholine.	AL1002
Isopteropodine	Serotonin Receptor Modulation	Rat Xenopus oocytes	EC50=14.5 mM	Active	Produced a 2.5-fold increase in current response evoked by serotonin.	AL1002
Alkaloid Fraction	Phagocytosis Stimulation	IP Mouse	10.0 mg/kg	Active	vs. clearance of colloidal carbon.	M12822
Alkaloid Fraction	CNS Effect	IP Mouse	10-20 mg/kg	Active	Attenuated the deficit in retention performance induced by the muscarinic receptor antagonist scopolamine (amnesic drug).	AL1010
Pentacylic Alkaloid Fraction	Anti-inflammatory Activity	Oral Human Adult			Rheumatoid arthritis patients taking sulfasalazine or hydroxychloroquine treatment. 24 weeks of treatment resulted in a reduction in the number of painful joints by 53.2%.	AL1005

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Pentacylic Alkaloid Fraction	Anti-inflammatory Activity	Oral Human Adult	Not stated	Active	Rheumatoid arthritis patients taking sulfasalazine or hydrochloroquine treatment. 28 weeks of treatment resulted in a reduction in the number of painful and swollen joints.	AL1005
Pentacylic Alkaloid Fraction	Immunostimulant Effect	In vitro	Not stated	Active	Stimulate endothelial cells to produce a lymphocyte-proliferation-regulating factor.	AL1012
Tetracyclic Alkaloid Fraction	Immunosuppressive Effect	In vitro	Not stated	Active	Inhibit endothelial cells to produce a lymphocyte-proliferation-regulating factor.	AL1012
Pentacyclic and Tetracyclic Fractions	Immunomodulating Effect	In vivo	Not stated	Active	Normalization of lymphocyte percentage observed through total leukocyte numbers did not change.	AL1012
Oxindole Alkaloids: uncarine E, uncarine C, mitraphylline, rhynchophylline	CNS Effect	IP Mouse	10-40 mg/kg	Active	Attenuated the deficit in retention performance induced by the muscarinic receptor antagonist scopolamine (amnesic drug).	AL1010
Oxindole Alkaloids: hirsutine, hirsuteine, rhynchophylline, isorhynchophyllinen dihydrocorynantheine	CNS Effect	Mice	Not stated	Active	Mild CNS depressive effect.	AL1022
Oxindole Alkaloids: hirsutine, hirsuteine, rhynchophylline, isorhynchophylline, dihydrocorynantheine	Antispasmodic Activity	Mouse (intestine)	Not stated	Weak Activity		AL1022
Oxindole Alkaloids: hirsutine, hirsuteine, rhynchophylline, isorhynchophylline, dihydrocorynantheine	Hypotensive Activity	Rat	Not stated	Active		AL1022
Dihydrocorynantheine	Antiarrhythmic Effect	Rabbit	10 mM	Active	Increased chronotropic cycle length, decreased slope of the pacemaker depolarization, decreased maximum rate of rise and prolonged action potential duration.	AL1016

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Dihydrocorynantheine Hirsutine	Antiarrhythmic Effect	Guinea pig (heart)	0.1 mM - 30 mM	Active Active	Decreased maximum rate of rise and prolonged action potential duration.	AL1016
Hirsuteine	Anticonvulsant Activity	Oral Mice	50 mg/kg 100 mg/kg 200 mg/kg	Weak Activity Active Strong Activity	Inhibited glutamate-induced convulsions.	AL1017
Hursutine	Anticonvulsant Activity	Oral Mice	Not stated	Weak Activity	Inhibited glutamate-induced convulsions.	AL1017
Hirsutine	Vasorelaxant Effect	Rat (aorta)	EC50=10.6 mM	Active	via calcium channel blocking activity.	AL1015
Hirsutine	Antiarrhythmic Effect	Rabbit	0.1 mM	Active	Increased chronotropic cycle length, decreased slope of the pacemaker depolarization, decreased maximum rate of rise and prolonged action potential duration.	AL1016
Hirsutine	Calcium Channel Blocker	Rat (aorta)	Not stated	Active	Decreased cytosol calcium release induced by noradrenaline and high potassium.	AL1018
Hirsutine	Intracellular Calcium Modulator	Not stated	30 mM	Active Active	Before caffeine treatment reduced caffeine-induced contraction. During calcium loading augmented contractile response to caffeine. Net effect - reduction of intracellular calcium level.	AL1018
Hirsutine	Nicotinic Receptor-Channel Blocker	Rat	10 mM	Active	Suppressed dopamine-release evoked by 100 mM of nicotine.	AL1019
Hirsutine	Nicotinic Receptor-Channel Blocker	Rat	1-10 mM	Active	Inhibited inward current activated by 100 mM nicotine.	AL1019
Hirsutine	Ion Channel Blocker	Rat	10 mM	Active	Inhibited Ba currents passing through calcium and potassium channels.	AL1019
Hirsutine	Vasodilator Effect	Rat (aorta)	10(-6) to 3 x 10(-5) M	Active	Inhibited contractions induced by norepinephrine, high potassium, serotonin and calcium channel activator YC-170.	AL1020
Hirsutine	Calcium Channel Blocker	Rat (aorta)	10(-6) to 3 x 10(-5) M	Active	Inhibited voltage-depended calcium influx.	AL1020

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Hirsutine Hirsuteine	Vasodilator Effect	IA Dog		Active		AL1021
Hirsutine	Antiulcer Activity	Mice	Not stated	Active	Preventative effect on the development of gastric erosions.	AL1022
Hirsutine	Antiarrhythmic Effect	Mice Guinea pig	Not stated	Active	Prevented aconitine-induced and ouabain-induced arrhythmias.	AL1022
Hirsutine	Antispasmodic Effect	Dog (urinary bladder)	Not stated	Weak Activity	Inhibited DMPP-induced contraction via inhibiting ganglionic transmission through blocking of the nicotinic receptor.	AL1023
Hirsutine	Anesthetic Activity	Dog (urinary bladder)	Not stated	Weak Activity	Local action.	AL1023
Isocorynoxeine	Anticonvulsant Activity	Oral Mice	100 mg/kg	Inactive	Glutamate-induced convulsions.	AL1017
rhynchophylline isorhynchophylline isocorynoxeine hirsuteine hirsutine	CNS Effect	Cell Culture	10(-3) M 10(-4)-10(-3) M 10(-4)-10(-3) M 10(-4)-3x10(-4)M 10(-4)-3x10(-4)M	Active Active Active Active Active	Increased cell viability of cells exposed to glutamate.	AL1013
rhynchophylline isorhynchophylline isocorynoxeine hirsuteine hirsutine	Calcium Channel Blocking Effect	Cell Culture	10(-3) M 3x10(-4)-10(-3)M 3x10(-4)-10(-3)M 3x10(-4)-10(-3)M 3x10(-4)-10(-3)M	Active Active Active Active Active	Inhibited calcium influx into cells induced by glutamate.	AL1013
Oxindole Alkaloids: rhychophylline, corynoxeine, isorhynchophylline isocorynoxeine	Calcium Channel Blocking Effect	Rat and Rabbit		Active	Inhibitory effect similar to verapamil on contractile response to high potassium, CaCl2, norepinephrine in normal and calcium free medium and 45Ca2+-uptake in thoracic aorta.	AL1014
Rhynchophylline	CNS Effect	Cell culture (NT2)	5 mol/L 50 mol/L	Active Active	Reduced NT2 neuron apoptosis induced by dopamine.	AL1026
Rhynchophylline	Cytotoxic Activity	Cell culture	5 mcg/ml	Active	Reversed multidrug resistance to vincristine on KBv200 cell line.	AL1027

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Rhynchophylline	Calcium Channel Blocker	Rat	10 mumol/L 50 mumol/L	Active Active	Reduced verapamil-sensitive calcium inward current by 60 % (10 mumol/L) an d 80% (50 mumol/L).	AL1029
Rhynchophylline	Antiarrhythmic Activity	Rat Guinea pig	30 mumoil/L	Active	Partially due to potassium channel blocking effects.	AL1030
Rhynchophylline	Motor Activity	Mice	Not stated	Active	Reduced spontaneous motor activity.	AL1032
Rhynchophylline	CNS Effect	Mice	Not stated	Active	Enhanced the sedative and hypnotic effects of sodium pentobarbital.	AL1032
Rhynchoophylline	CNS Effect	Rat (brain)	Not stated	Active	Increased serotonin content in the hypothalamus and cortex. Reduced dopamine concentrations in the cortex, amygdala and spinal cord but promoted release of endogenous dopamine.	AL1032
Rhynchophylline	Antithrombotic Activity	Rabbit	IC50=0.72, 0.74, 0.67 mmol/L	Active	Inhibited platelet aggregation induced by arachidonic acid, collagen and ADP. Reduced thromboxane B2 induced by collagen but not arachidonic acid. Suppressed malondialdehyde formation and inhibited platelet factor 4 release.	AL1033
Rhynchophylline	Antithrombotic Activity	IV Rat	10-20 mg/kg	Active	Inhibition of venous and cerebral thrombosis.	AL1033
Rhynchophylline	Hypotensive Activity	IV Dog	5 mg/kg	Active	Reduced mean arterial pressure, heart rate and coronary blood flow.	AL1034
Rhynchophylline	Hypotensive Activity	IV Dog	10 mg/kg	Inactive	Decreased renal blood flow but no effect on blood pressure.	AL1034
Rhynchophylline	Antithrombotic Activity	Rat	Not stated	Active	Inhibited platelet aggregation.	AL1035
Rhynchophylline	CNS Effect	IP Mouse	Not stated	Active Inactive	Reduced the mecamylamine-induced deficit in passive avoidance behaviour. Did not attenuate the effects of a N-methyl-D-aspartate receptor antagonist and diazepam.	AL1010
Isorhynchophylline	Hypotensive Activity	IV Dog	5 mg/kg	Active	Reduced mean arterial pressure but had no effect on renal blood flow.	AL1034

Compound Tested	Activity Tested For	Test Model	Dosage	Result	Notes/Organism tested	Ref #
Isorhynchophylline	Cardiac Effect	Guinea pig (atrium)	30 mumol/L 10 mumol/L 10 mumol/L 0.3 mmol/L	Active Active Active Active	Depressed adrenaline-induced automaticity. Prolonged functional refractory period and decreased excitability. Reduced the effect of ouabain on contractile force in left atrium. Inhibited the response to paired stimulation.	AL1028
Isorhynchophylline	Hypotensive Activity	IV Dog	1 mg/kg	Active	Reduced mean arterial pressure, heart rate and coronary blood flow.	AL1034
Isorhynchophylline	Negative Chronotropic Effect	IV Rat	2-4 mg/kg	Active	Negative chronotropic effect may be related to the block of calcium. Does not influence blood pressure.	AL1031
Uncarine E	CNS Effect	IP Mouse	20 mg/kg	Active	Blocked the impairment of passive avoidance performance caused by nicotinic receptor antagonist mecamylamine and an N-methyl-D-aspartate receptor antagonist.	AL1010
Uncarine E	CNS Effect	IP Mouse	20 mg/kg	Inactive	vs. benzodiazepine receptor agonist diazepam.	AL1010

Literature Cited - Cat's claw

E01043	PHARMACEUTICAL COMPOSITIONS CONTAINING UNCARIA TOMENTOSA EXTRACT FOR TREATING ALZHEIMER'S DISEASE AND OTHER AMYLOIDOSES.CASTILLO,G: SNOW,AD: PATENT-PCT INT PAOL-00 33,659 : 67PP-. (1998)(UNIV WASHINGTON USA)
H05466	PLANT METABOLITES. STRUCTURE AND IN VITRO ANTIVIRAL ACTIVITY OF QUINOVIC ACID GLYCOSIDES FROM UNCARIA TOMENTOSA AND GUETTARDA PLATYPODA. AQUINO,R: DE SIMONE,F: PIZZA,C: CONTI,C: STEIN,ML: J NAT PROD 52 4: 679-685 (1989)(DIPT CHIM SOSTANZE NATURAL UNIV NAPOLI NAPLES I-80138 ITALY)
H21551	TRITERPENES AND QUINOVIC ACID GLYCOSIDES FROM UNCARIA TOMENTOSA. AQUINO,R: DE TOMMASI,N: DE SIMONE,F: PIZZA,C: PHYTOCHEMISTRY 45 5: 1035-1040 (1997)(DIPT CHIM DELL SOSTAN NAT UNIV FED II NAPOLI NAPLES 80131 ITALY)
H25490	TWO NEW 19-HYDROXYURSOLIC ACID-TYPE TRITERPENES FROM PERUVIAN 'UNA DE GATO' (UNCARIA TOMENTOSA). KITAJIMA,M: HASHIMOTO,KI: YOKOYA,M: TAKAYAMA,H: AIMI,N: TETRAHEDRON 56 4: 547-552 (2000) (FAC PHARM SCI CHIBA UNIV CHIBA 260 JAPAN)
H26768	A NEW GLUCO INDOLE ALKALOID, 3,4-DEHYDRO-5-CARBOXYSTRICTOSIDINE, FROM PERUVIAN UNA DE GATO (UNCARIA TOMENTOSA). KITAJIMA,M: HASHIMOTO,KI: YOKOYA,M: TAKAYAMA,H: AIMI,N: SAKAI,SI: CHEM PHARM BULL 48 10: 1410-1412 (2000)(FAC PHARM SCI CHIBA UNIV CHIBA 260 JAPAN)
H28081	INVESTIGATION OF UNA DE GATO. I. 7-DEOXYLOGANIC ACID AND 15N NMR SPECTROSCOPIC STUDIES ON PENTACYCLIC OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA. MUHAMMAD,I: DUNBAR,DC: KHAN,RA: GANZERA,M: KHAN,IA: PHYTOCHEMISTRY 57 5: 781-785 (2001) (DEPT PHARMACOGNOSY SCH PHARMACY UNIV PITTSBURGH PITTSBURGH PA 15261 USA)
J10803	ALKALOIDS OF PERUVIAN UNCARIA TOMENTOSA. LAUS,G: BROSSNER,D: KELPLINGER,K: PHYTOCHEMISTRY 45 4: 855-860 (1997) (IMMODAL PHARM GHBH BUNDESSTRASSE AUSTRIA)
J12291	FINGERPRINTS OF UNCARIA TOMENTOSA LEAF, STEM AND ROOT BARK DECOCTION. TIRILLINI,B: PHYTOTHER RES 10 : S67-S68 (1996) (INST BOTAN ORTO BOTANICO URBINO ITALY)
J13160	PHARMACOLOGICALLY ACTIVE PROCYANIDINES FROM THE BARK OF UNCARIA TOMENTOSA. WIRTH,C: WAGNER,H: PHYTOMEDICINE 4 3: 265-266 (1997) (INST PHARM BIOL UNIV MUNCHEN MUNICH D-8000 GERMANY)
J18471	INDUCTION OF APOPTOSIS AND INHIBITION OF PROLIFERATION IN HUMAN TUMOR CELLS TREATED WITH EXTRACTS OF UNCARIA TOMENTOSA. SHENG,YH: PERO,RW: AMIRI,A: BRYNGELSSON,C: ANTICANCER RES 18 5AQ: 3363-3368 (1998) (DEPT CELL MOL BIOL SECT MOL ECOGNETICS UNIV LUND LUND S-22 07 SWEDEN)
K08663	CAPILLARY ELECTROPHORETIC ANALYSIS OF OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA. STUPPNER,H: STURM,S: KONWALINKA,G: J CHROMATOGR 609 1/2: 375-380 (1992) (INST PHARMACOG UNIV INNSBRUCK INNSBRUCK A-6020 AUSTRIA)
K09265	CAPILLARY ZONE ELECTROPHORETIC ANALYSIS OF OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA. STURM,S:STUPPNER,H: PLANTA MED SUPPL 58 1: A593-. (1992) (INST PHARMAK UNIV INNSBRUCK INNSBRUCK A-6020 AUSTRIA)
K09773	HPLC ANALYSIS OF THE MAIN OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA. STUPPNER,H: STURM,S: KONWALINKA,G: CHROMATOGRAPHIA 34 11/12: 597-600 (1992) (INST PHARMCOGN UNIV INNSBRUCK INNSBRUCK AUSTRIA)

K10349	MUTAGENIC AND ANTIMUTAGENIC ACTIVITIES OF UNCARIA TOMENTOSA AND ITS EXTRACTS. RIZZI,R: RE,F: BIANCHI,A: DE FEO,V: DE SIMONE,F: BIANCHI,L: STIVALA,LA: J ETHNOPHARMACOL 38 1: 63-77 (1993) (DEPT FARMACOL CHEMIOT TOSSICOL MED UNIV DEGL STUD DI MILANO MILANO ITALY)
K16523	SEPARATION OF STEREOISOMERIC OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY. LAUS,G: KEPLINGER,D: J CHROMATOGR A 662 2: 243-249 (1994) (IMMODAL PHARM VOLDERS A-6111 AUSTRIA)
K17909	A DIFFERENTIAL SENSITIVITY OF OXINDOLE ALKALOIDS TO NORMAL AND LEUKEMIC CELL LINES. STUPPNER,H: STURM,S: GEISEN,G: ZILLIAN,U: KONWALINKA,G: PLANTA MED 59 7: A583-. (1993) (INST PHARM UNIV INNSBRUCK INNSBRUCK AUSTRIA)
K24085	PHARMACEUTICAL COMPOSITIONS CONTAINING OXINDOLE ALKALOIDS FOR STIMULATING THE IMMUNOLOGICAL SYSTEM. KEPLINGER,K: KEPLINGER,D: PATENT-US-5,302,611 : 14PP-. (1994) (USA)
K24754	EXTRACTION OF OXINDOLE ALKALOIDS FROM PLANT MATERIAL. KEPLINGER,D:PATENT-EUR PAT APPL-665,231 : 5PP-. (1995) (IMMODAL PHARMAK GESELLSCHAFT)
K27875	BIOLOGICAL ACTIVITY OF MEDICINAL PLANTS OF ICA (PERU). KLINAR,S: CASTILLO,P: CHANG,A: SCHMEDA-HIRSCHMANN,G: REYES,S: THEODULOZ,C: RAZMILIC,I: FITOTERAPIA 66 4: 341-345 (1995) (LAB PROD NATURAL FAC FARM BIOQUIM UNIV SAN LUIS GONZAGA ICA PERU)
K29288	EVALUATION OF THE IN VITRO ANTIOXIDANT ACTIVITY IN EXTRACTS OF UNCARIA TOMENTOSA (WILLD.) DC. DESMARCHELIER,C: MONGELLI,E: COUSSIO,J: CICCIA,G: PHYTOTHER RES 11 3: 254-256 (1997) (CATEDRA BIOTECHNOL MICROBIOL FAC FARM BIOQUIMICA UNIV BUENOS AIRES BUENOS ARIES ARGENTINA)
K29900	IDENTIFICATION OF THE ALKALOIDS AND FLAVONOIDS FROM UNCARIA TOMENTOSA BARK BY TLC IN QUALITY CONTROL. VAN GINKEL,A: PHYTOTHER RES 10 : S18-S19 (1996) (AMOROS S A POL IND SANTIGA SPAIN)
L02933	ANTIOXIDANT ACTIVITY OF AN EXTRACT FROM UNCARIA TOMENTOSA. OSTRAKHOVICH,EA: MIKHAL'CHIK,EV: GETMANSKAYA,NV: DURNEV,AD: KHIM FARM ZH 31 6: 49-51 (1997) (TSENTR NARODNOI MED MOSCOW RUSSIA)
L03088	EVALUACION DE LA ACTIVIDAL IMMUNOESTIMULANTE DE UNCARIA TOMENTOSA (WILLD.) DC. UNA DE GATO EN RATONES ALBINOS. MARINA,MD: BIODIVERSIDAD SALUD 1 1: 16-19 (1998) (DEPT FARMACOL INST MED TRAD INST PERU SEG SOCIAL PERU)
L03092	PROCESAMIENTO DE LA UNCARIA TOMENTOSA (WILLD.) DC. UNA DE GATO EN IMET-IPSS. HERRERA,H: JORGE,E: BIODIVERSIDAD SALUD 1 1: 32-37 (1998) (INVEST INST MED TRAD INST PERU SEGUR SOCIAL PERU)
L03467	PENTACYCLIC OXINDOLE ALKALOIDS FROM UNCARIA TOMENTOSA INDUCE HUMAN ENDOTHELIAL CELLS TO RELESE A LYMPHOCYTE-PROLIFERATION-REGULATING FACTOR. WURM,M: KACANI,L: LAUS,G: KEPLINGER,K: DIERICH,MP: PLANTA MED 64 8: 701-704 (1998) (INST HYGIENE LEOPOLD FRANZENS UNIV INNSBRUCK AUSTRIA)
L03617	EVALUATION OF THE TOXICITY OF UNCARIA TOMENTOSA BY BIOASSAYS IN VITRO. SANTA MARIA,A: LOPEZ,A: DIAZ,MM: ALBAN,J: GALAN DA MERA,A: VICENTE ORELLANA,JA: POZUELO,JM: J ETHNOPHARMACOL 57 3: 183-187 (1997) (DEPT TOXICOL INST SALUD CARLOS III MADRID 28220 SPAIN)

L03706	STIMULATION OF INTERLEUKIN-1 AND -6 PRODUCTION IN ALVEOLAR MACROPHAGES BY THE NEOTROPICAL LIANA, UNCARIA TOMENTOSA (UNA DE GATO). LEMAIRE,I: ASSINEWE,V: CANO,P: AWANG,DVC: ARNASON,JT: J ETHNOPHARMACOL 64 2: 109-115 (1999) (DEPT CELL MOL MED UNIV OTTAWA OTTAWA K1H 8M5 CANADA)
L03868	TOTAL REACTIVE ANTIOXIDANT POTENTIAL (TRAP) AND TOTAL ANTIOXIDANT REACTIVITY (TAR) OF MEDICINAL PLANTS USED IN SOUTHWEST AMAZONA (BOLIVIA AND PERU). DESMARCHELIER,C: REPETTO,M: COUSSIO,J: LLESUY,S: CICCIA,G: INT J PHARMACOG 35 4: 288-296 (1997) (CATEDRA MICROBIOL INDUST BIOTECHNOL UNIV BUENOS AIRES BUENOS AIRES ARGENTINA)
L04137	AMAZONIAN ETHNOBOTANICAL DICTIONARY. DUKE,JA: BOOK : 181- (1994) (USA)
L04246	ANTIINFLAMMATORY ACTIONS OF CAT'S CLAW: THE ROLE OF NF-KB. SANDOVAL-CHACON,M: THOMPSON,JH: ZHANG,XJ: LIU,X: MANNICK,EE: SADOWSKA-KROWICKA,H: CHARBONNET,RM: CLARK,DA: MILLER,MSJ: ALIMENT PHARMACOL THER 12 2: 1279-1289 (1998) (DEPT PAEDIATRICS STANLEY LSU MED CENTER S SCOTT CANCER CENTER NEW ORLEANS LA 70112 USA)
L06405	ENHANCED DNA REPAIR, IMMUNE FUNCTION AND REDUCED TOXICITY OF C-MED-100TM, A NOVEL AQUEOUS EXTRACT FROM UNCARIA TOMENTOSA. SHENG,YZ: BRYNGELSSON,C: PERO,RW: J ETHNOPHARMACOL 69 2: 115-126 (2000)(DEPT CELL MOL BIOL SECT TUMOR IMMUNOL UNIV LUND LUND S-223 62 SWEDEN)
L06750	DEPLETION OF SPECIFIC BINDING SITES FOR ESTROGEN RECEPTOR BY UNCARIA TOMENTOSA. SALAZAR,EL: JAYME,V: PROC WEST PHARMACOL SOC 41 1: 123-124 (1998) (UNID INVEST MED BIOL REPROD DIV INVEST BIOMED HOSP GINECO MEXICO)
L08117	TREATMENT OF CHEMOTHERAPY-INDUCED LEUKOPENIA IN A RAT MODEL WITH AQUEOUS EXTRACT FROM UNCARIA TOMENTOSA. SHENG,Y: PERO,RW: WAGNER,H: PHYTOMEDICINE 7 2: 137-143 (2000) (DEPT CELL MOL BIOL SECT TRUMOR IMMUNOL UNIV LUND LUND SWEDEN)
L09661	AN IN VITRO EVALUATION OF HUMAN CYTOCHROME P450 3A4 INHIBITION BY SELECTED COMMERCIAL HERBAL EXTRACTS AND TINCTURES. BUDZINSKI,JW: FORSTER,BC: VANDENHOEK,S: ARNASON,JT: PHYTOMEDICINE 7 4: 273-282 (2000) (OTTAWA CARLETON INST BIOL UNIV OTTAWA OTTAWA ONTARIO CANADA)
L12755	CAT'S CLAW INHIBITS TNF ALPHA PRODUCTION AND SCAVENGES FREE RADICALS: ROLE IN CYTOPROTECTION. SANDOVAL,M: CHARBONNET,RM: OKUHAMA,NN: ROBERTS,J: KRENOVA,Z: TRENTACOSTI,AM: MILLER,MJS: FREE RADICAL BIOL MED 29 1: 71-78 (2000) (DEPT PEDIATRICS CENTER UNIV ALBANY MEDICAL ALBANY NEW YORK USA)
L13554	THE DEVELOPMENT OF A HUMAN TISSUE MODEL TO DETERMINE THE EFFECT OF PLANT-DERIVED DIETARY SUPPLEMENTS ON PROTHROMBIN TIME. JONES,SC: MIEDERHOFF,P: KARNES,HT: J HERBAL PHARMACOTHER 1 1: 21-34 (2001) (SCHOOL PHARMACY VA COMMONNWEALTH UNIV RICHMOND VA 23298 USA)
L15562	IMPROVED METHOD FOR THE DETERMINATION OF OXINDOLE ALKALOIDS IN UNCARIA TOMENTOSA BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY. GANZERA,M: MUHAMMAD,I: KHAN,R: KHAN,IA: PLANTA MED 67 5: 447-450 (2001) (NAT CENT DEV NAT PROD RES INST PHARM SCI UNIV MISSISSIPPI UNIVERSITY MS USA)
L17978	CO-OCCURRENCE OF HARMAN AND BETA-CARBOLINE-TYPE MONOTERPENOID GLUCOINDOLE ALKALOIDS IN UNA DE GATO (UNCARIA TOMENTOSA). KITAJIMA,M: YOKOYA,M: TAKAYAMA,H: AIMI,TN: NATURAL MED 55 6: 308-310 (2001) (FAC PHARM SCI CHIBA UNIV CHIBA 260 JAPAN)

M12822	ALKALOIDS OF UNCARIA TOMENTOSA AND THEIR PHAGOCYTOSIS ENHANCEMENT ACTIVITY. WAGNER,H: KREUTZKAMP,B: JURCIC,K: PLANTA MED 51 5: 419-423 (1985)(INST PHARM BIOL UNIV MUNCHEN MUNICH D-8000 GERMANY)
M16037	NEW QUINOVIC ACID GLYCOSIDES FROM UNCARIA TOMENTOSA. CERRI,R: AQUINO,R: DE SIMONE,F: PIZZA,C: J NAT PROD 51 2: 257-261 (1988) (INST ANAL FARM UNIV STUDI SASSARI SASSARI ITALY)
M23460	NEW POLYHYDROXYLATED TRITERPENES FROM UNCARIA TOMENTOSA. AQUINO,R: DE SIMONE,F: VINCIERI,FF: PIZZA,C: GACS-BAITZ,E: J NAT PROD 53 3: 559-564 (1990)(DIPT CHIM SOSTANZE NATURAL UNIV NAPOLI NAPLES I-80138 ITALY)
M25334	PHYTOCHEMICAL AND BIOLOGICAL RESERACH ON UNCARIA TOMENTOSA. SENATORE,A: CATALDO,A: IACCARINO,FP: ELBERTI,MG: BOLL SOC ITAL BIOL SPER 65 6: 517-520 (1989) (DIPT CHIM SOSTANZE NATURAL UNIV NAPOLI NAPLES I-80131 ITALY)
M27076	PLANT METABOLITES. NEW COMPOUNDS AND ANTIINFLAMMATORY ACTIVITY OF UNCARIA TOMENTOSA. AQUINO,R: DE FEO,V: DE SIMONE,F: PIZZA,C: CIRINO,G: J NAT PROD 54 2: 453-459 (1991) (DIPT CHIM SOSTANZE NATURAL UNIV NAPOLI NAPLES I-80131 ITALY)
T04747	CYTOSTATIC, CONTRACEPTIVE, AND ANTIINFLAMMATORY AGENT FROM UNCARIA TOMENTOSA ROOTS. KEPLINGER,K: PATENT-PCT INT APPL-WO 82 01,130 : 27PP-. (1982) (NO ADDRESS GIVEN)
AL1001	SYNTHESIS AND ABSOLUTE CONFIGURATION OF A NEW 3,4-DIHYDRO-BETA-CARBOLINE-TYPE ALKALOID, 3,4-DEHYDRO-5(S)-5-CARBOXYSTRICTOSIDINE, ISOLATED FROM PERUVIAN UNA DE GATO (UNCARIA TOMENTOSA). KITAJIMA,M: YOKOYA,M TAKAYAMA,H: AIMI,N: CHEM PHARM BULL. 50 10: 1376-8 (2002)(GRADUATE SCHOOL OF PHARMACEUTICAL SCIENCES, CHIBA UNI)
AL1002	PTEROPODINE AND ISOPTEROPODINE POSITIVELY MODULATE THE FUNCTION OF RAT MUSCARINIC M(1) AND 5-HT(2) RECEPTORS EXPRESSED IN XENOPUS OOCYTE. KANG,TH: MATSUMOTO,K: TOHDA,M: MURAKAMI,Y: TAKAYAMA,H: KITAJIMA,M: AIMI,N: WATANABE,H: EUR J PHARMACOL. 24 444(1-2): 39-45 (2002)(DEPT OF PHARMACOLOGY, INSTITUTE OF NAT'L MEDICINE, TOYAMA MEDICAL AND PHARMACEUTICAL UNI, TOYAMA, JAPAN)
AL1003	ANTI-INFLAMMATORY AND ANTIOXIDANT ACTIVITIES OF CAT'S CLAW (UNCARIA TOMENTOSA AND UNCARIA GUIANENSIS) ARE INDEPENDENT OF THEIR ALKALOID CONTENT. SANDOVAL,M: OKUHAMA,NN: ZHANG,XJ: CONDEZO,LA: LAO,J: ANGELES,FM: MUSAH,RA: BOBROWSKI,P: MILLER,MJ: PHYTOMEDICINE. 9 4: 325-37 (2002)(ALBANY MEDICAL COLLEGE, NY, USA)
AL1004	ANTI-INFLAMMATORY ACTIVITY OF TWO DIFFERENT EXTRACTS OF UNCARIA TOMENTOSA (RUBIACEAE). AGUILAR,JL: ROJAS,P: MARCELO,A: PLAZA,A: BAUER,R: REININGER,E: KLASS,CA; MERFORT,I: J ETHNOPHARMACOL. 81 2: 271-6 (2002)(IMMUNOLOGY LAB, FACULTY OF SCIENCES AND PHILOSOPHY, UNIVERSIDAD PERUANA CAYETANO HEREDIA, LIMA, PERU)
AL1005	RANDOMIZED DOUBLE BLIND TRIAL OF AN EXTRACT FROM THE PENTACYCLIC ALKALOID-CHEMOTYPE OF UNCARIA TOMENTOSA FOR THE TREATMENT OF RHEUMATOID ARTHRITIS. MUR,E: HARTIG,F: EIBL,G: SCHIRMER,M: J RHEUMATOL. 29 4: 656-8 (2002)(DEPT OF INTERNAL MEDICINE, INNSBRUCK UNI HOSPITAL, AUSTRIA)
AL1006	DIETARY ANTIOXIDANTS PROTECT GUT EPITHELIAL CELLS FORM OXIDANT-INDUCED APOPTOSIS. MILLER,MJ: ANGELES,FM: REUTER,BK: BOBROWSKI,P: SANDOVAL,M: BMC COIMPLEMENT ALTERN MED. 1 1:11 (2001)(CENTER FOR CARDIOVASCULAR SCIENCES, ALBANY MEDICAL COLLEGE, NEW YORK, USA).

AL1007	THE ANTIPROLIFERATIVE EFFECTS OF UNCARIA TOMENTOSA EXTRACTS AND FRACTIONS ON THE GROWTH OF BREAST CANCER CELL LINE. RIVA,L: CORADINI,D: DI FRONZO,G: DE FEO,V: DE TOMMASI,N: DE SIMONE,F: PIZZA,C: ANTICANCER RES. 21 (4A):2457-61 (2001)(ONCOLOGIA SPERIMENTALE C, ISTITUTO NAZIONALE PER LO STUDIO E LA CURA DEI TUMORI, MILANO, ITALY)
AL1008	EFFICACY AND SAFETY OF FREEZE-DRIED CAT'S CLAW IN OSTEOARTHRITIS OF THE KNEE: MECHANISMS OF ACTION OF THE SPECIES UNCARIA GUIANENSIS. PIXCOYA,J: RODRIGUEZ,Z: BUSTAMANTE,SA: OKUHAMA,NN: MILLER,MJ: SANDOVAL,M: INFLAMM RES. 50 9: 442-8 (2001)(UNIVERSIDAD NACIONAL MAYOR DE SAN MARCOS, FACULTAD DE MEDICINA, LIMA, PERU)
AL1009	PERSISTENT RESPONSE TO PNEUMOCOCCAL VACCINE IN INDIVIDUALS SUPPLEMENTED WITH A NOVEL WATER SOLUBLE EXTRACT OF UNCARIA TOMENTOSA, C-MED-100. LAMM,S: SHENG,Y: PERO,RW: PHYTOMEDICINE. 8 4: 267-74 (2001)(DEPT OF CELL AND MOLECULAR BIOLOGY, SECTION OF TUMOR AND IMMUNE BIOLOGY, UNI OF LUND, SWEDEN)
AL1010	EFFECTS OF UNCARIA TOMENTOSA TOTAL ALKALOID AND ITS COMPONENTS ON EXPERIMENTAL AMNESIA IN MICE: ELUCIDATION USING THE PASSIVE AVOIDANCE TEST. MOHAMED,AF: MATSUMOTO,K: TABATA,K: TAKAYAMA,H: KITAJIMA,M: WATANABE,H: J PHARM PHARMACOL. 52 12: 1553-61 (2000)(DEPT OF PHARMACOLOGY, INSTITUTE OF NATURAL MEDICINE, TOYAMA MEDICAL AND PHARMACEUTICAL UNI, JAPAN)
AL1010A	A DETERMINANT OF SUBSTRATE SPECIFICITY PREDICTED FROM THE ACYL-ACYL CARRIER PROTEIN DESATURASE OF DEVELOPING CAT'S CLAW SEED. CAHOON,EB: SHAH,S: SHANKLIN,J: BROWSE,J: PLANT PHYSIOL. 117 2: 593-8 (1998)(BIOLOGY DEPARTMENT, BROOKHAVEN NATIONAL LAB, UPTON, NEW YORK, USA)
AL1011	DNA REPAIR ENHANCEMENT OF AQUEOUS EXTRACTS OF UNCARIA TOMENTOSA IN A HUMAN VOLUNTEER STUDY. SHENG,Y: LI,L: HOLMGREN,K: PERO,RW: PHYTOMEDICINE. 8 4: 275-82 (2001)(DEPT OF CELL AND MOLECULAR BIOLOGY, SECTION OF TUMOR AND IMMUNE BIOLOGY, UNI OF LUND, SWEDEN)
AL1012	UNCARIA TOMENTOSA (WILLD.) DC. – ETHNOMEDICAL USE AND NEW PHARMACOLOGICAL, TOXICOLOGICAL AND BOTANICAL RESULTS. KEPLINGER,K: LAUS,G: WURM,M: DIERICH,MP: TEPPNER,H: J ETHNOPHARMACOL. 64 1: 23-34 (1999)(IMMODAL PHARMAKA GMBH, VOLDERS, AUSTRIA)
AL1013	EVALUATION OF THE PROTECTIVE EFFECTS OF ALKALOIDS ISOLATED FROM THE HOOKS AND STEMS OF UNCARIA SINENSIS ON GLUTAMATE-INDUCED NEURONAL CELL DEATH IN CULTURED CEREBELLAR GRANULE CELLS FROM RATS. SHIMADA,Y: GOTO,H: ITOH,T: SAKAKIBARA,I: KUBO,M: SASAKI,H: TERASAWA,K: J PHARM PHARMACOL 51 6: 715-22 (1999)(DEPT OF JAPANESE ORIENTAL MEDICINE, TOYAMA MEDICAL CANTER AND PHARMACEUTICAL UNIVERSITY, SUGITANI, JAPAN)
AL1014	SCREENING TEST FOR CALCIUM ANTAGONIST IN NATURAL PRODUCTS. THE ACTIVE PRINCIPLES OF UNCARIAE RAMULUS ET UNCUS. AMAHARA,J: MIKI,S: MATSUDA,H: KOBAYASHI,G: FUJIMURA,H: NIPPON YAKURIGAKU ZASSHI. 90 3: 133-40 (1987)(KYOTO PHARMACEUTICAL UNI, JAPAN)
AL1015	GEISSOSCHIZINE METHYL ETHER, AN INDOLE ALKALOID EXTRACTED FROM UNCARIAE RAMULUS ET UNCUS, IS A POTENT VASORELAXANT OF ISOLATED RAT AORTA. YUZURIHARA,M: IKARASHI,Y: GOTO,K: SAKAKIBARA,I: HAYAKAWA,T: SASAKI,H: EUR J PHARMACOL. 444 3: 183-9 (2002)(KAMPO AND PHARMACOGNOSY LAB, IBARAKI, JAPAN)
AL1016	EFFECTS OF HIRSUTINE AND DIHYDROCORYNANTHEINE ON THE ACTION POTENTIALS OF SINO-ATRIAL NODE, ATRIUM AND VENTRICLE. MASUMIYA,H: SAITOH,T: TANAKA,Y: HORIE,S: AIMI,N: TAKAYAMA,H: TANAKA,H: SHIGENOBU,K: LIFE SCI. 65 22: 2333-41 (1999)(DEPT OF PHARMACOLOGY, TOHO UNIVERSITY SCHOOL OF PHARMACEUTICAL SCIENCES, CHIBA, JAPAN)

AL1017	ANTI-CONVULSION EFFECTS OF CHOT-SAN AND CHOTOKO (UNCARIAE UNCIS CAM RAMLUS) INMICE, AND IDENTIFICATION OF THE ACTIVE PRINCIPLES. MIMAKI,Y: TOSHIMIZU,N: YAMADA,K, SASHIDA,Y: YAKUGAKU ZASSHI. 117 12: 1011-21 (1997)
AL1018	EFFECTS OF HIRSUTINE, AN ANTIHYPERTENSIVE INDOLE ALKALOID FROM UNCARIA RHYNCHOPHYLLA, ON INTRACELLULAR CALCIUM IN RAT THORACIC AORTA. HORIE,S: YANO,S: AIMI,N: SAKAI,S: WATANABE,K: LIFE SCI 50 7: 491-8 (1992)(DEPT OF DRUG EVALUATION AND TOXICOLOGICAL SCIENCES, CHIBA UNI, JAPAN)
AL1019	INHIBITION OF ION CHANNELS BY HIRSUTINE IN RAT PHEOCHROMOCYTOMA CELLS. NAKAZAWA,K: WATANO,T: OHARA-IMAIZUMI,M: INOUE,K: FUJIMORI,K: OZAKI,Y: HARADA,M: TAKANAKA,A: JPN J PHARMACOL. 57 4: 507-15 (1991)(DIVISION OF PHARMACOLOGY, NATIONAL INSTITUTE OF HYGIENIC SCIENCES, TOKYO, JAPAN)
AL1020	CA2+ CHANNEL BLOCKING EFFECTS OF HIRSUTINE, AN INDOLE ALKALOID FROM UNCARIA GENUS, IN THE ISOLATED RAT AORTA. YANO,S: HORIUCHI,H: HORIE,S: AIMI,N: SAKAI,S: WATANABE,K: PLANTA MED. 57 5: 403-5 (1991)(DEPT OF DRUG EVALUATION AND TOXICOLOGICAL SCIENCES, FACULTY OF PHARMACEUTICAL SCIENCES, CHIBA UNI, JAPAN)
AL1021	VASODILATIVE EFFECTS OF INDOLE ALKALOIDS OBTAINED FROM DOMESTIC PLANTS, UNCARIA RHYNCHOPHYLLA MIQ. AND AMSONIA ELLIPTICA TOEM. ET SCHULT. OZAKI,Y: NIPPON YAKURIGAKU ZASSHI. 95 2: 47-54 (1990)(DIVISION OF PHARMACOGNOSY AND PHYTOCHEMISTRY, NATIONAL INSTITUTE OF HYGIENIC SCIENCES, TOKYO, JAPAN)
AL1022	PHARMACOLOGICAL STUDIES OF INDOLE ALKALOIDS OBTAINED FROM DOMESTIC PLANTS, UNCARIA RHYNCHOPHYLLA MIQ. AND AMSONIA ELLIPTICA ROEM. ET SCHULT. OZAKI,Y: NIPPON YAKURIGAKU ZASSHI. 94 1: 17-26 (1989)(DIVISION OF PHARMACOGNOSY AND PHYTOCHEMISTRY, NATIONAL INSTITUTE OF HYGIENIC SCIENCES, TOKYO, JAPAN)
AL1023	SITE OF THE GANGLION BLOCKING ACTION OF GARDNERAMINE AND HIRSUTINE IN THE DOG URINARY BLADDER IN SITU PREPARATION. OZAKI,Y: HARADA,M: JPN J PHARMACOL 33 2: 463-71 (1983)
AL1024	ALKALOIDS AND PROCYANIDINS OF AN UNCARIA SP. FROM PERU. DE MATTA,SM: MONACHE,FD: FERRARI,F; MARINI-BETTOLO,GB: FARMACO (SCI). 31 7: 527-35 (1976)
AL1025	QUINOVIC ACID GLYCOSIDES FROM UNCARIA GUIANENSIS. YEPEZ,AM: DE UGAZ,OL: ALVAREZ,CM: DE FEO,V: AQUINO,R: DE SIMONE,F: PIZZA,C: PHYTOCHEMISTRY. 30 5: 1635-7 (1991)(DEPARTAMENTO DE QUIMICA, PONTIFICIA UNIVERSITAD CATOLICA DEL PERU, LIMA)
AL1026	EFFECT OF RHYNCHOPHYLLINE ON APOPTOSIS INDUCED BY DOPAMINE IN NT2 CELLS. SHI,JS; KENNETH,HG: ACTA PHARMACOL SIN. 23 5: 445-449 (2002)(DEPT OF PHARMACOLOGY, ZUNYI MEDICAL COLLEGE, ZUNYI, CHINA)
AL1027	STUDY ON ACTIVE CONSTITUENTS OF TRADITIONAL CHINESE MEDICINE REVERSING MULTIDRUG RESISTANCE OF TUMOR CELLS IN VITRO. ZHANG,H: YANG,L: LIU,S: REN,L: ZHONG YAO CAI. 24 9: 655-7 (2001)(NORTH CHINA COAL MEDICAL COLLEGE, TANGSHAN)
AL1028	EFFECTS OF ISORHYNCHOPHYLLINE ON PHYSIOLOGICAL CHARACTERISTICS OF ISOLATED GUINEA PIG ATRIUM. ZHU,Y: HUANG,X: LIU,G: ZHONGGUO ZHONG YAO ZA ZHI. 20 2: 112-4,128 (1995)(ZUNYI MEDICAL COLLEGE)
AL1029	BLOCKING EFFECT OF RHYNCHOPHYLLINE ON CALCIUM CHANNELS IN ISOLATED RAT VENTRICULAR MYOCYTES. WANG,XL: ZHANG,LM: HUA,Z: ZHONGGUO YAO LI XUE BAO. 15 2: 115-8 (1994) (INSTITUTE OF MATERIA MEDICA, CHINESE ACADEMY OF MEDICAL SCIENCES, BEIJING)

AL1030	EFFECT OF RHYNCOPHYLLINE ON POTASSIUM CHANNELS IN ISOLATED RAT OR GUINEA PIG VENTRICULAR MYOCYTES. WANG,XL: ZHANG,LM: HUA,Z: YAO XUE XUE BAO. 20 1: 9-14 (1994)(INSTITUTE OF MATERIA MEDICA, CHINESE ACADEMY OF MEDICAL SCIENCES, BEIJING)
AL1031	THE NEGATIVE CHRONOTROPIC EFFECT OF ISORHYNCHOPHYLLINE AND ITS MECHANISM. ZHU,Y: ZHONGGUO ZHONG YAO ZA ZHI. 18 12: 745-7, 764 (1993)(ZUNYI MEDICAL COLLEGE)
AL1032	EFFECTS OF RHYNCHOPHYLLINE ON MOTOR ACTIVITY OF MICE AND SEROTONIN AND DOPAMINE IN RAT BRAIN. SHI,JS; HUANG,B: WU,Q: REN,RX: XIE,XL: ZHONGGUO YAO LI XUE BAO. 14 2: 114-7 (1993)(DEPT OF PHARMACOLOGY, ZUNYI MEDICAL COLLEGE, CHINA)
AL1033	INHIBITORY EFFECT OF RHYNCHOPHYLLINE ON PLATELET AGGREGATION AND THROMBOSIS. CHEN,CX: JIN,RM: LI,YK: ZHONG,J; YUE,L: CHEN,SC: ZHOU,JY: ZHONGGUO YAO LI XUE BAO 13 2: 126-30 (1992)(DEPT OF PHARMACOLOGY, SHANGHAI COLLEGE OF TRADITIONAL CHINESE MEDICINE)
AL1034	EFFECTS OF RHYNCHOPHYLLINE AND ISORHYNCHOPHYLLINE ON BLOOD PRESSURE AND BLOOD FLOW OF ORGANS IN ANESTHETIZED DOGS. SHI,JS: LIU,GX: WU,Q: HUANG,YP: ZHANG,XD: ZHONGGUO YAO LI XUE BAO. 13 1: 35-8 (1992)(DEPT OF PHARMACOLOGY, ZUNYI MEDICAL COLLEGE, CHINA)
AL1035	EFFECT OF RHYNCOPHYLLINE ON PLATELET AGGREGATION AND EXPERIMENTAL THROMBOSIS. JIN,RM: CHEN,CX: LI,YK:XU,PK: YAO XUE XUE BAO. 26 4: 246-9 (1991)(DEPT OF PHARMACOLOGY, SHANGHAI COLLEGE OF TRADITIONAL CHINESE MEDICINE)
AL1036	THE SAGA OF THE CAT'S CLAW. CABIESES, FERNANDO. VIA LACTERA EDITORES: LIMA, PERU (1994)
AL1037	UNCARIA TOMENTOSA, ASPECTOS THNOMEDICOS, MEDICOS, FARMACOLOGICOS, BOTANICOS, AGRONOMICOS, COMERCIALES, LEGALES, ANTHROPOLOGICOS, SOCIALES Y POLITICOS. OCAMPO,T: PALMIRO, ED. INSTITUTO DE DESARROLLO RURAL PERURANO. 74 (1994)(LIMA, PERU)
ZZ1005	THE HEALING FOREST. MEDICINAL AND TOXIC PLANTS OF THE NORTHWEST AMAZONIA. SCHULTES,RE: RAFFAUF: R.F. DIOSCORIDES PRESS. (1990)(PORTLAND, OREGON)
ZZ1027	MEDICINAL AND MAGICAL PLANTS IN THE NORTHERN PERUVIAN ANDES. DE FEO,V: FITOTERAPIA 63: 72: 417-440 (1992)
ZZ1041	CATOLOGO DE PLANTAS UTILES DE LA AMAZONIA PERUANA. RUTTER,RICHARD,A: (1990)(MINISTERIO DE EDUCACION, INSTITUTO LINGUISTICO DE VERANO: PUCALLPA, PERU)

For Clinical Research and Journal Article Abstracts - Go to Medline