

LE Magazine March 2007

## Nutraceutical UPDATE

### Cat's Claw

#### A Rainforest Herb Quells Inflammation, Supports Immunity, and Fights Cancer

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Harvested Cat's Claw

Native to Central and South America, cat's claw has been used for hundreds of years in traditional folk medicine to treat a variety of health complaints. The reputed health benefits of this indigenous herb have led scientists in the United States and other countries to closely examine its effects in the body. Their findings suggest that this little-known botanical agent exerts powerful anti-inflammatory and antioxidant effects that support DNA repair, joint health, immune function, and normal cell division.<sup>1</sup>

Cat's claw was first popularized by the German natural scientist Arturo Brell, who in 1926 migrated from Munich to Pozuzo, a small town founded by German colonists in the Peruvian rainforest. Dr. Brell used cat's claw to treat his rheumatic pain. He later treated another German colonist, Luis Schuler, who had been diagnosed with terminal lung cancer. After other therapies had failed, Mr. Schuler began consuming cat's claw root tea three times a day. He improved remarkably, and one year later was apparently free of cancer.

The two known species of cat's claw are *Uncaria guianensis*, used traditionally for wound healing, and *Uncaria tomentosa*, which has numerous medicinal uses and is most commonly found in supplements. Cat's claw is a rich source of phytochemicals: its more than 30 known constituents include at least 17 alkaloids, along with glycosides, tannins, flavonoids, sterol fractions, and other compounds. Scientists previously attributed the efficacy of cat's claw to compounds called oxindole alkaloids;<sup>1</sup> more recently, however, water-soluble cat's claw extracts that do not contain significant amounts of alkaloids were found to possess strong antioxidant and anti-inflammatory effects. This finding led researchers to conclude that quinic acid esters are the active constituents of water-soluble cat's claw extract.<sup>2</sup>

#### A POTENT ANTIOXIDANT AND ANTI-INFLAMMATORY

Cat's claw extracts demonstrate powerful antioxidant effects in quenching the dangerous peroxy and superoxide radicals. Laboratory analysis indicates that the antioxidant power of cat's claw exceeds that of many extracts of fruits, vegetables, cereals, and medicinal plants.<sup>3</sup>

Chronic inflammation underlies many diseases that plague aging adults, and cat's claw is a potent anti-inflammatory agent. Cat's claw extract inhibits the production of tumor necrosis factor-alpha, an inflammatory messenger that sets the stage for both acute and chronic inflammation.<sup>4</sup> Cat's claw likewise inhibits the activation of nuclear factor-kappa beta, an inflammatory "switch" that is associated with cancer and other deadly diseases.<sup>5,6</sup> Cat's claw also decreased the experimentally induced release of prostaglandin E2, an inflammatory mediator associated with conditions such as arthritis.<sup>4</sup>

#### CAT'S CLAW RELIEVES ARTHRITIS DISCOMFORT

Arthritis can be one of the most physically disabling conditions associated with aging. Cat's claw extract suppresses inflammation to promote healthy joint structure and function, as well as relieve the pain and discomfort of arthritis.

Scientists recently discovered that cat's claw may protect cartilage, the tissue that functions like a shock absorber at joint surfaces where bones meet. Loss of cartilage, which is a defining characteristic of osteoarthritis, occurs when the breakdown of cartilage outpaces its regeneration. When human cartilage cells were exposed to joint-destroying interleukin-1 beta, cat's claw helped restore levels of joint-protective insulin-like growth factor-1. By suppressing inflammatory agents that can degrade cartilage, while activating a cartilage-protective biochemical, cat's claw may help



to preserve healthy cartilage in aging joints.<sup>7</sup>

In a clinical trial, scientists found that cat's claw offered relief for adults suffering from osteoarthritis. Forty-five patients with osteoarthritis of the knee participated in this randomized, placebo-controlled, four-week trial. Those who received a cat's claw preparation saw significant reductions in pain associated with physical activity. Within just one week of starting the cat's claw therapy, both physicians and patients recorded significant improvement in subjective assessments of osteoarthritis pain. The scientists attributed the arthritis-relieving effects of cat's claw to its antioxidant and anti-inflammatory properties.<sup>4</sup>

Cat's claw may similarly benefit people suffering from rheumatoid arthritis, a painful condition marked by severe joint inflammation and stiffness. In a 12-month clinical trial of 41 subjects who were undergoing pharmaceutical treatment for rheumatoid arthritis, supplementing with cat's claw extract led to improvement in painful and swollen joints. This improvement in joint pain may help people suffering from disabling rheumatoid arthritis to regain the functional ability to perform activities of daily living.<sup>8</sup>

## CAT'S CLAW: WHAT YOU NEED TO KNOW

- The Amazon rainforest is considered a treasure trove of undiscovered medicinal plants. Indigenous peoples have long used cat's claw to treat inflammation, arthritis, stomach ulcers, and infections, and scientists believe this Peruvian vine holds great potential as a botanical therapeutic agent for human health.
- Scientists have confirmed that cat's claw imparts powerful antioxidant and anti-inflammatory effects, and may thus help manage illnesses associated with oxidative stress and inflammation.
- Cat's claw helps protect joint cartilage and has displayed efficacy in relieving joint pain, indicating it may be helpful for people suffering from arthritis.
- Cat's claw extract improves markers of immune system health in animals and humans, suggesting that it may help defend against infectious invaders.
- Cat's claw protects cellular DNA against damage and supports the repair of damaged DNA. Protecting these genetic blueprints is considered essential in protecting against cancer.
- Cat's claw may aid the fight against cancer by promoting healthy cell division, promoting the death of leukemia cells (cancer of the blood), and inhibiting the proliferation of breast cancer cells.
- Cat's claw is generally safe and well tolerated, but should not be used by pregnant or nursing women, young children, people taking antihypertensive medications, those with autoimmune conditions, or individuals undergoing organ or tissue transplants.

## CAT'S CLAW BOOSTS IMMUNE HEALTH

Animal and human studies suggest that, in addition to exhibiting powerful antioxidant and anti-inflammatory effects, cat's claw naturally boosts the immune system, strengthening its defenses against the multitude of pathogens encountered each day in the air, water, and environment.

In a study of cat's claw's effects on the immune system of rats, eight weeks of cat's claw supplementation significantly elevated the animals' white blood cell count, suggesting an improved ability to fight off infectious invaders. Adult men who supplemented with cat's claw for six months likewise experienced an increase in their white blood cell count, indicating enhanced immune function.<sup>9</sup>

Another clinical study indicates that cat's claw may help boost the efficacy of vaccines. When adults supplemented with cat's claw for two months before receiving a pneumonia vaccination, their antibody titers (an indication of immunity to pneumonia) remained at higher levels five months longer than in the control subjects. This finding suggests that when used with a vaccine, cat's claw confers additional protection against the pneumonia virus.<sup>10</sup>



## CAT'S CLAW ENHANCES DNA REPAIR

Laboratory experiments offer evidence that the effects of cat's claw extend to the cellular level and may help preserve the integrity of DNA, the genetic blueprint of the body's cells. A vital cell component, DNA is highly vulnerable to damage from free-radical assault, which can contribute to the initiation of cancer and other lethal diseases.

To ascertain whether cat's claw extract can protect delicate DNA from oxidative stress, scientists conducted a study of cultured human skin cells. They found that an aqueous extract of cat's claw protected skin cells from death induced by ultraviolet radiation, by increasing the cells' ability to repair ultraviolet-light-induced DNA damage.<sup>11</sup>

Although chemotherapy plays a critically important role in contemporary cancer treatment, its great drawback is that can damage DNA in healthy cells. When adult volunteers who had previously undergone chemotherapy supplemented with water-soluble cat's claw extract for eight weeks, they exhibited markedly decreased DNA damage and increased DNA repair. The participants also demonstrated an increase in white blood cell proliferation. This is an important finding, as chemotherapy typically suppresses white blood cell counts and thus increases one's susceptibility to infections. Cat's claw may thus provide crucial DNA and white blood cell support to cancer patients undergoing chemotherapy.<sup>12</sup>

## **CAT'S CLAW SUPPRESSES CANCER PROLIFERATION**

Exciting laboratory findings suggest that cat's claw may be a powerful ally in the fight against cancer by preventing the abnormal cell division that characterizes this dreaded disease.

In a finding with important potential applications in the field of women's health, cat's claw extract prevented the proliferation of human breast cancer cells in the laboratory.<sup>13</sup> Cat's claw also displays activity against leukemia cells (cancer of the blood-producing cells in bone marrow). European researchers found that cat's claw inhibited human leukemia cells from growing in the laboratory and induced them to undergo programmed self-destruction (apoptosis). Certain constituents in cat's claw not only halted cancer cell growth, but killed the cancer cells outright.<sup>14</sup>

Although the precise mechanism by which cat's claw counters cancer is not yet fully understood, scientists believe that its ability to regulate certain immune system cytokines may help strengthen the body's defense against cancer.<sup>15,16</sup>

## **SAFETY AND DOSAGE**

Cat's claw is generally well tolerated and considered non-toxic. According to reports, its only potential side effect is diarrhea. However, since cat's claw may stimulate the immune system, it should be avoided by those undergoing organ transplants, skin grafts, and immunosuppressive therapy. While evidence suggests that cat's claw may benefit rheumatoid arthritis sufferers, it should not be used on a long-term basis in people with autoimmune disorders (such as lupus or multiple sclerosis) until further studies are available. Pregnant or breastfeeding women and children under the age of three should avoid using cat's claw.<sup>1,17</sup>

Commercial cat's claw preparations vary in dosage and standardization of active constituents. The typical dosage of a cat's claw preparation is up to 350 mg daily, standardized to contain 8% carboxy alkyl esters.<sup>1</sup>

Editor's note: Some commercially available cat's claw preparations contain compounds called tetracyclic oxindole alkaloids (TOAs) and pentacyclic oxindole alkaloids (POAs) at levels that may have an anti-hypertensive effect, and thus should not be used with antihypertensive (blood-pressure-lowering) drugs. This warning does not apply to cat's claw extracts (such as the one used by Life Extension) that use a patented ultra-filtration water-extraction process to remove high-molecular-weight TOA and POA compounds and limit their maximum concentration to 0.05%.

## **CONCLUSION**

The health-promoting properties of cat's claw extracts exemplify why scientists believe the rich plant life of the Amazon rain forest may contain countless undiscovered medicinal agents with applications for human health.

Used for hundreds of years by indigenous cultures, cat's claw demonstrates powerful antioxidant and anti-inflammatory effects, as well as immune-modulating capabilities. As such, cat's claw is emerging as an important new agent for relieving joint discomfort, protecting the integrity of DNA, staving off infection, and enhancing the body's defense against cancer.

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## **References**

1. Williams JE. Review of antiviral and immunomodulating properties of plants of the Peruvian rainforest with a particular emphasis on Una de Gato and Sangre de Grado. *Altern Med Rev.* 2001 Dec;6(6):567-79.
2. Sheng Y, Akesson C, Holmgren K, Bryngelsson C, Giamapa V, Pero RW. An active ingredient of Cat's Claw water extracts identification and efficacy of quinic acid. *J Ethnopharmacol.* 2005 Jan 15;96(3):577-84. Covered by patent nos. 6,039,238 and 6,23,675.
3. Pilarski R, Zielinski H, Ciesiolka D, Gulewicz K. Antioxidant activity of ethanolic and aqueous extracts of *Uncaria tomentosa* (Willd.) DC. *J Ethnopharmacol.* 2006 Mar 8;104(1-2):18-23.
4. Piscocoya J, Rodriguez Z, Bustamante SA, Okuhama NN, Miller MJ, Sandoval M. Efficacy and safety of freeze-dried cat's claw

in osteoarthritis of the knee: mechanisms of action of the species *Uncaria guianensis*. *Inflamm Res*. 2001 Sep;50(9):442-8.

5. Sandoval-Chacon M, Thompson JH, Zhang XJ, et al. Antiinflammatory actions of cat's claw: the role of NF-kappaB. *Aliment Pharmacol Ther*. 1998 Dec;12(12):1279-89.
6. Akesson C, Lindgren H, Pero RW, Leanderson T, Ivars F. An extract of *Uncaria tomentosa* inhibiting cell division and NF-kappa B activity without inducing cell death. *Int Immunopharmacol*. 2003 Dec;3(13-14):1889-900.
7. Miller MJ, Ahmed S, Bobrowski P, Haqqi TM. The chondroprotective actions of a natural product are associated with the activation of IGF-1 production by human chondrocytes despite the presence of IL-1beta. *BMC Complement Altern Med*. 2006 Apr 7;6:13.
8. Mur E, Hartig F, Eibl G, Schirmer M. 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.
9. Sheng Y, Bryngelsson C, Pero RW. Enhanced DNA repair, immune function and reduced toxicity of C-MED-100\*, a novel aqueous extract from *Uncaria tomentosa*. *J Ethnopharmacol*. 2000 Feb;69(2):115-26.
10. Lamm S, Sheng Y, Pero RW. Persistent response to pneumococcal vaccine in individuals supplemented with a novel water soluble extract of *Uncaria tomentosa*, C-Med-100\*. *Phytomedicine*. 2001 Jul;8(4):267-74.
11. Mammone T, Akesson C, Gan D, Giampapa V, Pero RW. A water soluble extract from *Uncaria tomentosa* (Cat's Claw) is a potent enhancer of DNA repair in primary organ cultures of human skin. *Phytother Res*. 2006 Mar;20(3):178-83.
12. Sheng Y, Li L, Holmgren K, Pero RW. DNA repair enhancement of aqueous extracts of *Uncaria tomentosa* in a human volunteer study. *Phytomedicine*. 2001 Jul;8(4):275-82.
13. Riva L, Coradini D, Di Fronzo G, et al. The antiproliferative effects of *Uncaria tomentosa* extracts and fractions on the growth of breast cancer cell line. *Anticancer Res*. 2001 Jul-Aug;21(4A):2457-61.
14. Bacher N, Tiefenthaler M, Sturm S, et al. Oxindole alkaloids from *Uncaria tomentosa* induce apoptosis in proliferating, G0/G1-arrested and bcl-2-expressing acute lymphoblastic leukaemia cells. *Br J Haematol*. 2006 Mar;132(5):615-22.
15. Hayakawa Y, Smyth MJ. Innate immune recognition and suppression of tumors. *Adv Cancer Res*. 2006;95:293-322.
16. Spellman K, Burns JJ, Nichols D, Winters N, Ottersberg S, Tenborg M. Modulation of cytokine expression by traditional medicines: a review of herbal immunomodulators. *Altern Med Rev*. 2006 Jun;11(2):128-50.
17. Available at: [http://www.pdrhealth.com/drug\\_info/nmdrugprofiles/herbaldrugs/100580.shtml](http://www.pdrhealth.com/drug_info/nmdrugprofiles/herbaldrugs/100580.shtml). Accessed December 4, 2006.

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