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FILE: ■ Nettle (*Urtica dioica*)

■ Efficacy

■ Safety

HC 070575-347

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RE: Review of Nettle: Safety and Efficacy

Chrubasik JE, Roufogalis BD, Wagner H, Chrubasik SA. A comprehensive review on nettle effect and efficacy profiles, Part I: Herba urticae. *Phytomed.* 2007;14(1):423-435.

The leaves or flowering aerial parts of nettle (*Urtica dioica*) are recommended for relieving the symptoms of arthritis and urinary tract infections and as a diuretic. Nettle may be consumed as a hydroalcoholic extract (corresponding to 8-12 g nettle leaf daily) or as an infusion (up to 5 g taken three times daily), but also as freshly squeezed juice or crude plant material. The main active constituents of nettle appear to be flavonoids and caffeic and fatty acid derivatives. The purpose of this article was to review the scientific literature and present safety and efficacy data for nettle.

The authors searched the Medline database to retrieve articles published through July 2006. They also contacted experts in the field and hand searched the bibliographies of all articles to identify additional studies. The authors presented the results under the three categories of in vitro experiments, in vivo animal studies, and human clinical studies.

In Vitro Experiments

Various nettle extracts have shown immune-modulating effects in laboratory experiments. The ethanolic nettle extract IDS23 inhibited the production of pro-inflammatory prostaglandins in blood cells. IDS23 also inhibited the release of some cytokines (hormone-like proteins that regulate the immune response) in cells from healthy controls and also from people with arthritis. In certain white blood cells, the nettle extract IDS30 suppressed the expression of cytokines that break down collagen, which may indicate a protective effect of nettle on cartilage.

Various nettle extracts also had antioxidant effects. An aqueous extract inhibited peroxide formation and suppressed superoxide generation in a fat emulsion to a greater extent than vitamin E and some other antioxidants. A hydroalcoholic extract of nettle inhibited brain

lipid peroxidation by more than 50%. Nettle may also have an effect on aggregation of platelets. Ethyl acetate extracts of nettle strongly inhibited thrombin, an enzyme that triggers blood clotting, and reduced aggregation of blood platelets. However, aqueous extracts had only a weak effect on platelet aggregation.

In Vivo Animal Studies

Studies in animals suggest that nettle has anti-inflammatory, anesthetic, and analgesic effects. The ethanolic nettle extract IDS23 reduced inflammation in rats with experimentally-induced gonarthrosis (an advanced arthritic destruction of the knee joint), and the effect was similar to that of the anti-inflammatory drug diclofenac. The nettle extract IDS30 protected against early weight loss and severe colitis symptoms in mice with induced colitis. Mice given injections of aqueous nettle extract had a higher pain threshold than control mice when subjected to the hot-plate and acetic-acid writhing tests. An ethanolic nettle extract improved pain tolerance in the writhing test but had no effect on rodents in the hot plate test, whether given orally or by injection.

Nettle extracts also had antioxidant and diuretic effects in animals. An ethanolic extract stimulated liver antioxidant enzymes in mice, and rats given 1% dried nettle in their food had less accumulation of free electrons in parts of the brain. Intravenous nettle extract increased urine production and excretion of sodium in rats, and this was associated with a decrease in blood pressure. Oral administration of various nettle extracts yielded mixed results in several rodent studies.

Human Clinical Studies

Ten clinical studies investigated the ability of nettle extracts to increase diuresis or treat symptoms in people with arthritis or allergic rhinitis. Although the studies showed a trend toward effectiveness for these conditions, the quality of all ten studies is described as poor. There is currently no strong evidence that nettle preparations in the doses used in these clinical studies are effective. Side effects were rarely seen in these clinical studies. The most common side effects for nettle were allergic reactions, mild gastrointestinal complaints, and delayed hypersensitivity reactions.

The authors conclude that while laboratory and animal studies suggest anti-inflammatory, antioxidant, and analgesic effects for nettle extracts, the clinical studies to date are not convincing. They point out that the various nettle extracts studied are not comparable because of the different extraction solvents and methods used to prepare them. In the future, high-quality clinical trials using placebo-controlled, double-blind design and standardized extracts may confirm the activity seen in laboratory and animal studies and provide more convincing evidence of the benefits of nettle.

—*Heather S. Oliff, PhD*

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