

RESEARCH LETTER

STINGING NETTLE CREAM FOR OSTEOARTHRITIS

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Osteoarthritis (OA) is the most common joint disease and one of the oldest documented chronic diseases of humans; archaeologists have found changes typical of osteoarthritis in prehistoric human bones.^{1(p51)} The malady's antiquity is further evidenced by the plethora of remedies reportedly used by aboriginal peoples for relief from the pain of "rheumatism." The Native American people known as the Ohlone, formerly inhabiting the central coastal region of California where our research was conducted, utilized at least 12 different herbs for painful joints. Among these Ohlone medicinal plants, we selected stinging nettle, *Urtica dioica*, for a pilot study, as it has shown beneficial effects in patients with joint pain.⁴

The American College of Rheumatology⁵ recommends a stepped approach to control pain of OA, ranging from nonpharmacological measures, through various medications, to surgery when other therapies fail. Alternative therapies exist, some of which are widely used by patients with or without physician recommendation. Glucosamine is the most widely known of these

agents. Others include chondroitin, S-adenosylmethionine (SAME), methylsulfonylmethane (MSM), and a variety of herbal treatments such as devil's claw (*Harpagophytum procumbens*), turmeric (*Curcuma longa*), and ginger (*Zingiber officinale*).⁶ A previous study demonstrated efficacy of fresh nettle leaf applied directly to aching joints compared to a control application of "dead nettle" plant.⁴ For our study, we prepared the plant in a topical cream, as this was considered a more practical way to eventually incorporate this treatment in a clinical setting. We conducted a trial of stinging nettle cream prepared by compounding 13.33% (w/w) stinging nettle extract (Liquid Phyto-Caps Nettle Leaf, lot number A1413230000910, Gaia Herbs, Brevard, North Carolina) in Lipobase oil-in-water emulsion (lot number 0802256, Gallipot Pharmaceuticals, St Paul, Minnesota). Twenty-three patients with radiologically confirmed OA were recruited sequentially in a primary care clinic. These subjects applied the cream twice daily for 2 weeks. Western Ontario and MacMaster Universities Osteoarthritis Index (WOMAC) short form assessments measuring functional status⁷ were conducted at baseline and at week 2. The Student's *t*-test was used to analyze the WOMAC scores, and subjects were also monitored for any untoward effects.

After 2 weeks' treatment, we observed a mean reduction (representing improved function) of 4.17 (95% CI 1.87, 6.48) in WOMAC score from a mean baseline score of 17.22. Mild side effects were seen in 2 patients: transient tingling and mild discomfort. Many of the enrolled subjects requested continuance of the treatment after the study was over, as it seemed to help alleviate pain and improve function.

Although no firm conclusion can be made from this study regarding efficacy, the potential for efficacy is supported. Stinging nettle could prove beneficial to patients with osteoarthritis in 2 general ways: (1) pain relief and (2) disease process modification. The intact leaf hair's sting could provide a counter-irritation that decreases pain by depleting substance P, similar to the effect of capsaicin. An extract of the leaf, despite lacking the intact hairs, still contains multiple potential modulators of inflammatory or pain pathways.⁸

The stinging hairs of *Urtica dioica* are known to contain the chemicals histamine, acetylcholine, and serotonin. The precise cause of irritation and pain is unknown, but one study suggested that the initial phase of the skin reaction may be due to histamine

* Our source, Gaia Herbs, Brevard, North Carolina, did not specify a subspecies name. The California native *Urtica dioica* ssp *holosericea* (Hoary nettle) is most commonly cited as the nettle used locally,² although Bocek simply cites "*Urtica* sp" for Ohlone uses.³ Other varieties of *Urtica*, such as *U dioica* ssp *gracilis* (*U californica*, American Stinging Nettle; Sn-SM) and the related genus *Hesperocnide* (*tenella* = Western Nettle; Na-s) have probably been used similarly, eg, *Urtica urens* (= Dwarf Nettle; eu), by the Shuswap.³

in the plant's hairs, and the persistent sensation phase may be caused by other substances in nettle fluid directly toxic to nerves or capable of secondary mediators.⁹ Pharmaceutical properties attributed to stinging nettle tops include analgesic, antiinflammatory, local anesthetic, hemostatic, antibacterial, and antiviral.⁸

If stinging nettle effectively relieves pain, then that is valuable in its own right. Moreover, pain relief itself may slow or reverse pathophysiology by allowing for regular exercise, thereby increasing protective muscular strength and improving biomechanics. Additionally, some of the chemical milieu found in nettle might ameliorate deleterious effects of inflammatory cytokines.¹⁰

More definitive investigation of stinging nettle applied topically for treatment of pain would be worthwhile, as this method of application has a high likelihood of safety and desirability. An effective topical alternative, in contrast to oral medications, would alleviate many safety concerns of patients and their physicians regarding toxicity and drug interactions. Furthermore, many patients appreciate the sensation of a topical agent massaged directly onto the affected area. Such an ethnobotanical agent that proves to be effective through objective trials would be a valuable addition to the modern pharmacopeia.

Acknowledgments

Research funded by an Eberhardt Teacher/Scholar Award from the University of the Pacific, Stockton, California. We acknowledge Charles Leiter, PharmD, of Leiter's Pharmacy, San Jose, California, for providing many of the supplies used in this study. Thanks to Elkhorn Slough National Estuarine Research Reserve for providing informational resources.

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