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HerbClip™

File: ■ Arnica (*Arnica montana*)
■ Muscle Pain
■ Homeopathy

HC 101014-418

Date: February 15, 2011

RE: Study Finds Homeopathic Arnica Cream Not Effective on Acute Muscle Pain

Adkison JD, Bauer DW, Chang T. The effect of topical arnica on muscle pain. *Ann Pharmacother.* October 2010;44(10):1579-1584.

Arnica (*Arnica montana*) flower and stem has historically been used topically for inflammation, muscle pain, sprains, and bruises as a liniment or homeopathic cream. Internal use of arnica extract should be avoided. If taken internally, arnica extract causes adverse side effects including gastroenteritis, muscle paralysis, and cardio-toxicity. Homeopathic arnica is a safe form of arnica that can be applied topically as a cream or taken internally in pill form. An alcohol extract can also be applied directly or in cream form.

Herbal arnica preparations have a much higher extract concentration than homeopathic preparations. Homeopathic remedies are produced by multiple dilutions of a plant extract. Strength is determined by the amount of dilution in the extract that is expressed with letters that correspond to the factored dilution as "X" or "D" (factor of 10), "L" (factor of 50), or "C" (factor of 100). Arnica 30X is arnica tincture diluted to $1 \cdot 10^{30}$ in solvent. In several studies using oral homeopathic arnica to treat post-exercise delayed-onset muscular soreness, a tendency toward relief was noted in some data, but preparations and results were inconsistent.

Previous studies performed with animals and in vitro have shown that arnica possesses antimicrobial, anti-inflammatory, analgesic, anti-rheumatic, and uterus-stimulating properties primarily due to its sesquiterpene lactones. Arnica lactones "inhibit human platelet function and nuclear factor κ-B (NF-κB)."[1] This action results in the reduction of inflammation by reducing synthesis of pro-inflammatory cytokines, cyclooxygenase 2, and nitric oxide synthase.

One study compared the anti-inflammatory benefits for hand arthritis of arnica gel (50 g tincture/100 g gel) and ibuprofen gel (5%). Similar improvement was observed in both test groups for pain intensity and hand function (95.2% difference for confidence intervals and inferiority thresholds).[2] This result showed that topical herbal arnica gel

was comparable to the effectiveness of ibuprofen gel for pain and mobility improvement in arthritis occurring in the hand.

Another study on patients with knee osteoarthritis showed that pain, stiffness, and functionality index scores were improved from baseline, with the use of arnica gel applied topically to the localized area (50 g tincture/100 g gel).[3]

This randomized, placebo-controlled, double-blind study was conducted at The University of Texas Health Science Center at Houston to confirm the findings of previous studies on arnica use for muscle soreness. Fifty-three subjects, male (19) and female (34) of ages 18-65, completed the study. Data were collected from December 2007 to August 2008. All of the subjects were interviewed and determined to be free of any chronic disease associated with muscle pain, tenderness, or stiffness. The subjects were given 1 tube of homeopathic (manufactured according to the *Homeopathic Pharmacopeia of the United States*) 1X-7% arnica cream and 1 tube of placebo cream (both provided by Boiron Group; Sainte-Foy-les-Lyon, France) randomly. The tubes were marked with the words "left" or "right" to indicate which leg to apply the cream. Each subject served as their own control. Subjects participated in filling out a 10-point visual analog scale (VAS) to assess pain. Two secondary endpoints assessed were range of motion and level of pain associated with muscle tenderness. Muscle pain associated with tenderness was also rated along a VAS.

Subjects on a stair-step used 1 leg at a time and performed two-second heel lifts placing the ankles in plantar-flexion 25 times consecutively. This sequence was repeated with the other leg. The sequence of repetitions was repeated 20 times on each leg, followed by 15 times on each leg to induce muscle soreness. The creams were applied to each appropriate leg directly after the exercise regimen. The subjects rated their pain along the VAS scale 24 hours after the initial exercise. At that point, subjects applied the cream to each leg for a second time. Forty-eight hours after the exercise the subjects had ankle range of motion and calf tenderness measured. Tenderness was rated on day 3 by placing a 5 lb. weight across the mid-calf of each leg, and subjects ranked the tenderness of each leg on the 10-point VAS scale. They also rated their pain on the VAS scale, and then applied the cream the final time. At 72 hours, the final pain assessment was measured by the subjects on the VAS scale.

Data results showed that patients initially experienced more pain in the leg that received the application of homeopathic arnica cream, compared to the placebo. Non-paramagnetic statistics were used to analyze the data. Leg pain scores were analyzed with a Wilcoxon signed ranks test to compare the difference in scores between the arnica cream and placebo on days 1, 2, 3, and 4. There was only a difference reported on day 2, where subjects reported having more pain in the leg that received the arnica cream than the placebo cream (3.04 vs. 2.36, respectively, $P < 0.005$). Manufacturer assays confirmed that the placebo/active key for identifying the creams was correct. A t-test was used to analyze the secondary range of motion measure. Scores from baseline (day 1) compared to day 3 showed no significant difference in range of motion ($t = -1.942$, $df = 52$, $P = 0.058$). No statistically significant difference in tenderness was documented by the subjects, with 35 experiencing tenderness on pressure in the arnica leg compared to 29 subjects in the placebo leg.

In conclusion, subjects who used the homeopathic arnica cream on their legs exhibited little or no pain relief. This was a double-blind study which would have eliminated any

bias toward the active ingredient. Theoretically, symptoms may have worsened due to homeopathic "healing crisis" where symptoms increase before improvement, but no evidence of this was demonstrated on the final two days. Further studies with topical arnica are important to develop optimal strength and extract form for pain and inflammation.

—Erin Miner

References

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[2]Oliff HS. Arnica gel as effective as ibuprofen gel in osteoarthritis of the hands. *HerbClip*. May 31, 2007 (No. 050571-329). Austin, TX: American Botanical Council. Review of Choosing between NSAID and arnica for topical treatment of hand osteoarthritis in a randomised, double-blind study by Widrig R, Suter A, Saller R, Melzer J. *Rheumatol Int*. 2007;27(6):585-591.

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The American Botanical Council has chosen not to reprint the original article.