Effects of Topical Arnica Gel on Post-Laser Treatment Bruises

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BACKGROUND. **Claims have been made suggesting that topical arnica prevents and speeds the resolution of bruises, yet there are no well-designed placebo-controlled studies to date evaluating topical arnica's effect on bruising.**

OBJECTIVE. **To compare the efficacy of topical arnica in the prevention and resolution of laser-induced bruising.**

METHODS. **Nineteen patients with facial telangiectases were enrolled in this randomized, double-blinded, placebo-controlled study and were divided into pretreatment and posttreatment groups. The pretreatment group applied arnica with vehicle to one side of the face and vehicle alone to the other side of the face twice a day for 2 weeks prior to laser treatment. The posttreatment group followed the same procedure for 2 weeks after laser treatment. On day 0, all patients were treated for facial telangiectases using a 585 nm pulsed dye laser. Bruising was assessed using a visual analog scale on days 0, 3, 7, 10, 14, and 17 by the patient and the physician. In addition, photographs taken at each of the follow-up visits were later assessed by a second physician using the visual analog scale.**

RESULTS. **There was no statistically significant difference between the mean scores of arnica and vehicle ($P = 0.496$) and the mean scores of arnica and vehicle ($P = 0.359$) in the pretreatment and posttreatment groups, respectively.**

CONCLUSION. **No significant difference was found between topical arnica and vehicle in the prevention or resolution of bruising.**

D. ALONSO, MD, M. C. LAZARUS, BS, AND L. BAUMANN, MD HAVE INDICATED NO SIGNIFICANT INTEREST WITH COMMERCIAL SUPPORTERS.

ARNICA, also known as leopard's bane or mountain tobacco, is an extract that is derived from several plant species including *Arnica montana*, *Arnica chamissonis*, *Arnica fulgens*, *Arnica cordifolia*, and *Arnica sororia*. Many homeopathic formulations of arnica including tinctures, ointments, creams, gels, and tablets are on the market. Arnica has been used as a homeopathic remedy for hundreds of years and has been advocated by manufacturers for the treatment of pain, stiffness, and swelling associated with trauma. In addition, it has been widely recommended and used for the prevention and quickened resolution of bruises. However, there is a paucity of research to support the hypothesis that arnica prevents or speeds the healing of bruises.

Bruising is a common, unwanted side effect of many cosmetic procedures including pulsed dye laser treatment, liposuction, botulinum toxin injections, and soft tissue augmentation. Thus a treatment that would prevent or hasten the resolution of bruising would be very useful. As a result, we designed a randomized, double-blind, placebo-controlled trial to compare the efficacy of topical arnica with vehicle in the prevention and resolution of laser-induced bruising.

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Materials and Methods

Nineteen patients with facial telangiectases were enrolled in the study after signing an institutional review board-approved consent form. Patients on anticoagulant therapy were excluded from the study. There was a 2-week washout period for any topical medication.

The patients were divided randomly into pretreatment (9 patients) and posttreatment (10 patients) groups. Each patient received two gels, labeled A and B. The gels were provided by the manufacturer, Boericke and Tafel. One gel contained arnica with vehicle (*A. montana* 1× tincture made with 45% alcohol, purified water, witch hazel, trolamine, carboner, EDTA, and methyl/propyl paraben) and the other gel was the vehicle alone. Application of gels A and B was randomly assigned to each side of the face for each patient.

Patients in the pretreatment group applied gel A to one side and gel B to the other side of the face twice a day for 2 weeks prior to laser treatment. The 585 nm laser was used on day 0 to treat facial telangiectases. Patients were instructed to use no other skin care products except a daily sunscreen and a moisturizer as needed after the laser treatment. The posttreatment group patients applied gel A to one side and gel B to the other side of the face twice a day for 2 weeks following the laser treatment beginning at day 0.

Laser treatment was performed, with an attempt to use the same number of pulses on each side of face. A 5 mm spot size with 6.3 J/cm^2 fluency was used for all the patients except one, for whom a 3 mm spot size with a 6.3 J/cm^2 fluency was used. Bruising was assessed using a visual analog

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scale (VAS) (10 cm line with 0 = no bruising and 10 = worst bruising) on days 0, 3, 7, 10, 14, and 17 by the patient and the physician. In addition, photographs were taken at each of the follow-up visits and these were later assessed by a second physician using the VAS. The patients and physicians were blinded.

Results

The data were evaluated with a repeated measures analysis of variance (ANOVA). In the pretreatment group there was no statistically significant difference between the mean scores of arnica (mean 4.335) and vehicle (mean 4.572) with a *P* value of 0.496. Figure 1 shows the change in the VAS score as a function of time after treatment in the patients that used arnica and vehicle gel topically for 2 weeks prior to laser therapy (pretreatment group).

In the posttreatment group, the mean scores of arnica (mean 3.901) and vehicle (mean 4.128) showed no statistically significant difference, with a *P* value of 0.359. Figure 2 demonstrates the change in the VAS score as a function of time after treatment in the patients that used arnica and vehicle gel topically for 2 weeks following laser therapy (posttreatment group).

No side effects from the arnica or vehicle gel were noted or reported.

Discussion

Arnica is an herbal product used frequently by physicians and homeopaths. Homeopathic medications are prepared through a process of diluting alcohol or pure water with a particular remedy. The mixture is repetitively diluted and shaken vigorously, or "succussed." It is then categorized according to successive dilutions,

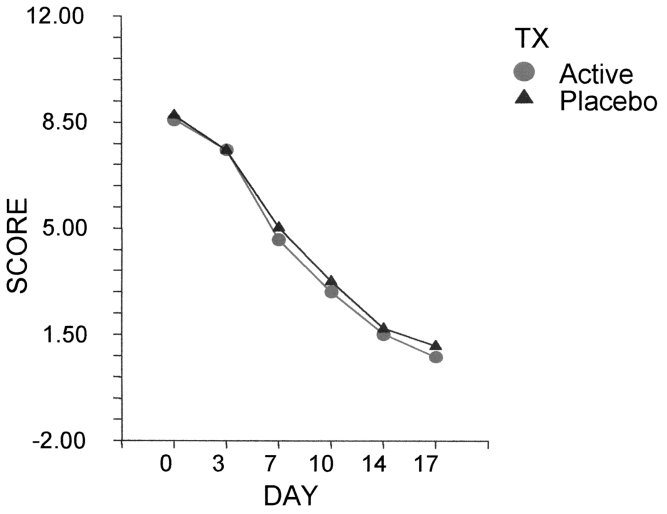

Figure 1. Pretreatment group mean of VAS scores.

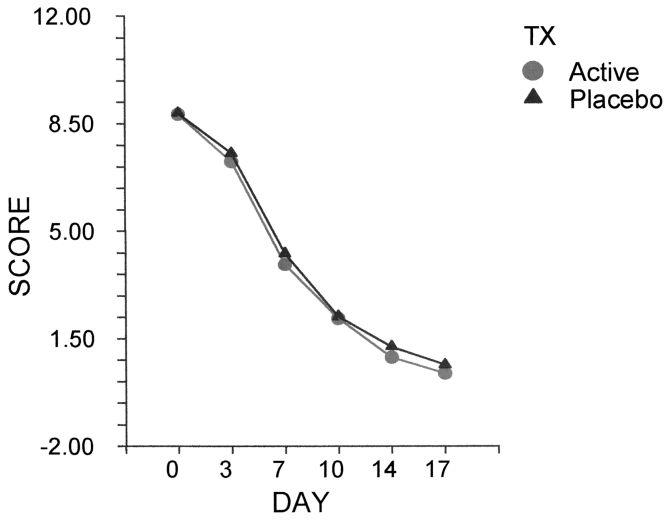

Figure 2. Posttreatment group mean of VAS scores.

with increased dilutions resulting in higher homeopathic potency. A potency of 30× is considered by homeopaths to be much stronger than a potency of 6×, although it is more dilute. We used a concentrated arnica gel (1× tincture) that is considered to be of low homeopathic potency but contains the highest concentration of arnica of the available topical preparations.

Arnica contains sesquiterpene lactones including helenalin, 11α,13-dihydrohelenalin, and chamissonolid which are thought to be the active components mediating its pharmacologic anti-inflammatory effects.[1] Helenalin inhibits neutrophil migration and chemotaxis and, at very high concentrations, prostaglandin synthetase.[2] Moreover, the sesquiterpene lactones, helenalin, and at higher concentrations, 11α,13-dihydrohelenalin and chamissonolid have been shown to inhibit the activation of the transcription factor NF-κB in T cells, B cells, and epithelial cells.[1] NF-κB controls the transcription of various cytokine and adhesion molecule genes in addition to genes required for antigen presentation.[3]

The effects of arnica on bruising are poorly understood. Schroder et al.[4] showed in vitro inhibition of human platelet function by helenalin and 11α,13-dihydrohelenalin, and Baillargeon et al.[5] found that oral arnica had no significant effect on various blood coagulation parameters, including bleeding time in vivo. In spite of these findings, many physicians and homeopaths recommend arnica to reduce and improve bruising. To date there have been no published studies evaluating the effects of topical arnica on bruising, yet there have been a few trials evaluating the effect of oral arnica on bruising or bleeding.

McIvor[6] evaluated ecchymosis in 200 patients undergoing the removal of impacted lower wisdom teeth

or apicoectomy. Arnica was administered to the patients 3 days prior to surgery and twice a day after surgery only if the patient noted any swelling. He reported that 90% of the patients had no edema or ecchymosis 3 days after surgery. This study was limited by the lack of blinded placebo control. Furthermore, the method of assessment and the dose of arnica were not specified. Campbell[7] performed a single-blind controlled study evaluating the effect of oral arnica 10 M versus placebo on bruising. Bruises were produced mechanically on the forearms of subjects with a device composed of a free-falling weighted plunger. Patients were administered an oral placebo before bruising and then again at 12 and 24 hours after bruising. The bruises were measured on day 3 or 4 after bruising. After 72 hours the same method was followed, substituting placebo with oral arnica 10 M, and bruising was produced on the opposite forearm. Campbell reported that 6 of 13 patients had smaller bruises with arnica treatment, 7 of 13 patients showed no difference between arnica and placebo, and no patients had smaller bruises with placebo. Limitations of this study include a lack of randomization and statistical analysis. Pinset et al.[8] found no significant difference in bleeding after dental extraction with oral arnica C30 in a randomized double-blind trial. Ramelet et al.[9] performed a multicentric, randomized, double-blind, placebo-controlled study in 130 patients undergoing saphenous vein stripping. The patients were administered oral arnica CH5 or placebo sublingually the night before surgery and immediately after surgery. No significant difference between arnica and placebo was found in the postoperative hematomas.

In the literature there are reports evaluating only oral arnica of varying dilutions, and the studies supporting arnica's effect on bruising are sparse and not well designed. Furthermore, the best designed study, by Ramelet et al.,[9] demonstrated that arnica did not prevent bruising. Despite the lack of positive data, arnica is commonly recommended to patients to improve bruising. In fact, many topical products that contain arnica claim to improve bruising on the package label. Although arnica is frequently used to treat bruising, our study demonstrated no effect of topical arnica on the prevention or quickened healing of laser-induced bruising.

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