



The Science behind ChopSaver®

A Detailed Analysis of the Ingredients in
Gosling's Original ChopSaver Lip Care



THE SCIENCE BEHIND CHOPSAVER

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Plants and herbs have been used for medicinal purposes for thousands of years. Every culture on earth has used them for the treatment of nearly every malady known to man. Even many so-called “Western medicines” trace their origins to plants. Many Eastern traditions use herbs almost exclusively and more and more Western doctors are learning about the benefits of herbal remedies. These therapies are often referred to as CAM or *Complementary and Alternative Medicine*.

When professional trumpeter Dan Gosling set out to create the ChopSaver formula, he had three objectives in mind. The first was that it would feel good when applying. The second was that it would have true therapeutic value. The third was that it would have a pleasant fragrance – unlike so many other lip products. Goal #1 was achieved by the use of natural, plant-based moisturizers. Goal #2 was solved with the use of a unique blend of herbs known for their ability to fight chapping, swelling and soreness. Goal #3, the fragrance, was realized through a careful blending of four citrus oils. However, the FDA has strict guidelines about medical claims for herbs, so we must refrain from using words like “treats” or “heals” in our external marketing and labeling.

However, the fact remains that clinical research on many of the botanicals contained in ChopSaver already exists in the medical literature. The following is a thumbnail sketch of each ingredient explained in lay terms followed by, where applicable, references to scientific studies specific to that component. It should be noted these are just a representative sample of the kind of documentation that exists on these ingredients.

“ChopSaver is the best lip balm I have ever tried, and my patients agree! It magically stays put and lasts a long time without being waxy.”

Jo Bohannon-Grant, MD, FAAD
Dermatologist – Midlothian, VA

THE SCIENCE BEHIND CHOPSAVER

THE HERBS

ARNICA

Arnica (*Arnica montana*) can be used topically as a cream, ointment, liniment, salve, or tincture. Europeans and Native Americans have used arnica to soothe muscle aches, reduce swelling and inflammation, and heal wounds. It is often the first remedy used for injuries such as sprains and bruises. It belongs to the sunflower family.

Studies

Use of Arnica to relieve pain after carpal-tunnel release surgery.

Altern Ther Health Med. 2002 Mar-Apr;8(2):66-8.

Jeffrey SL, Belcher HJ.

Abstract

CONTEXT: Arnica is commonly used by the public as a treatment for bruising and swelling.

OBJECTIVE: To assess whether Arnica administration affects recovery from hand surgery.

DESIGN: Double-blind, randomized comparison of Arnica administration versus placebo.

SETTING: Specialist hand surgery unit at the Queen Victoria NHS Trust.

PARTICIPANTS: Thirty-seven patients undergoing bilateral endoscopic carpal-tunnel release between June 1998 and January 2000.

INTERVENTION: Homeopathic Arnica tablets and herbal Arnica ointment compared to placebos.

MAIN OUTCOME MEASURES: Grip strength, wrist circumference, and perceived pain measured 1 and 2 weeks after surgery.

RESULTS: No difference in grip strength or wrist circumference was found between the 2 groups. However, **there was a significant reduction in pain experienced after 2 weeks in the Arnica-treated group (P<.03).**

Choosing between NSAID and arnica for topical treatment of hand osteoarthritis in a randomized, double-blind study.

Rheumatol Int. 2007 Apr;27(6):585-91. Epub 2007 Feb 22.

Widrig R, Suter A, Saller R, Melzer J.

Abstract

The use of topical preparations for symptom relief is common in osteoarthritis. The effects of ibuprofen (5%) and arnica (50 g tincture/100 g, DER 1:20), as gel preparations in patients with radiologically confirmed and symptomatically active osteoarthritis of interphalangeal joints of hands, were evaluated in a randomized, double-blind study in 204 patients, to ascertain differences in pain relief and hand function after 21 days' treatment. There were no differences between the two groups in pain and hand function improvements, or in any secondary end points evaluated. Adverse events were reported by six patients (6.1%) on ibuprofen and by five patients (4.8%) on arnica. **Our results confirm that this preparation of arnica is not inferior to ibuprofen when treating osteoarthritis of hands.**

Anti-inflammatory activity of *Lychnophora passerina*, Asteraceae (Brazilian "Arnica").

J Ethnopharmacol 2011 May 17; 135(2):393-8.

Capelari-Oliveira P, Paula CA, Rezende SA, Campos FT, Grabe-Guimarães A, Lombardi JA, Saúde-Guimarães DA.

Abstract

ETHNOPHARMACOLOGICAL RELEVANCE:

Lychnophora passerina (Asteraceae), popularly known as "arnica," is used to treat inflammation, pain, rheumatism, contusions, bruises and insect bites in Brazilian traditional medicine.

RESULTS: In vitro assays showed remarkable anti-inflammatory activity of *L. passerina* crude ethanolic extract (EE) and its ethyl acetate (A) and methanolic (M) fractions, through the inhibition of production of NO and TNF- α inflammatory mediators and induction of production of IL-10 anti-inflammatory cytokine. In vivo assays showed anti-inflammatory activity for EE 10% ointment, similar to the standard drug diclofenac gel. The A and M fraction ointments 20% presented anti-inflammatory activity.

CONCLUSION: The results obtained showed that possible anti-inflammatory effects of EE and its A and M fractions may be attributed to inhibition pro-inflammatory cytokines production, TNF- α and NO and to increased IL-10 production. EE, A and M ointments showed topical in vivo anti-inflammatory activity. The in vivo anti-inflammatory activity of EE of *L. passerina* may be related to synergistic effects of different substances in the crude extract. **Therefore, traditional use of aerial parts of *L. passerina* in the inflammatory conditions could be beneficial to treat topical inflammatory conditions, as evidenced by the present study.**

Effect of Arnica D30 in marathon runners. Pooled results from two double-blind placebo controlled studies.

Homeopathy 2003 Oct;92(4):187-9

Tveiten D, Brusset S.

Abstract

OBJECTIVE: To examine whether the homeopathic medicine Arnica D30 has an effect on muscle soreness and cell damage after marathon running.

METHODS: The subjects were 82 marathon runners from two separate randomized double-blind placebo controlled trials participating in the Oslo Marathon in 1990 and 1995. Five pills of Arnica D30 or placebo were given morning and evening. Treatment started on the evening before the marathon and continued on day of the race and the three following days. The runners assessed muscular soreness on a visual analogue scale. Muscle enzymes, electrolytes and creatinine were measured before and after the marathon.

RESULTS: **Muscle soreness immediately after the marathon run was lower in the Arnica group than in the placebo group (P = 0.04).** Cell damage measured by enzymes was similar in the Arnica and the placebo group.

CALENDULA

Calendula (*Calendula officinalis*) comes from the flower petals of the calendula plant or marigold, and has been used for medicinal purposes since at least the 12th century. Calendula contains high amounts of flavonoids which are plant-based anti-oxidants that protect the body against cell-damaging free radicals. Researchers are still learning what active ingredients in calendula are responsible for its healing properties, but it appears to have anti-inflammatory, antiviral, and anti-bacterial effects.

Studies

Anti-inflammatory, anti-tumor-promoting, and cytotoxic activities of constituents of marigold (*Calendula officinalis*) flowers.

J Nat Prod. Dec 2006;69(12):1692-1696

Ukiya M, Akihisa T, Yasukawa K, et al.

Abstract

Ten oleanane-type triterpene glycosides, 1-10, including four new compounds, calendulaglycoside A 6'-O-methyl ester (2), calendulaglycoside A 6'-O-n-butyl ester (3), calendulaglycoside B 6'-O-n-butyl ester (5), and calendulaglycoside C 6'-O-n-butyl ester (8), along with five known flavonol glycosides, 11-15,

were isolated from the flowers of marigold (*Calendula officinalis*). Upon evaluation of compounds 1-9 for inhibitory activity against 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced inflammation (1 microg/ear) in mice, **all of the compounds, except for 1, exhibited marked anti-inflammatory activity**, with ID50 values of 0.05-0.20 mg per ear. In addition, when 1-15 were evaluated against the Epstein-Barr virus early antigen (EBV-EA) activation induced by TPA, compounds 1-10 exhibited moderate inhibitory effects (IC50 values of 471-487 mol ratio/32 pmol TPA). **Furthermore, upon evaluation of the cytotoxic activity against human cancer cell lines in vitro in the NCI Developmental Therapeutics Program, two triterpene glycosides, 9 and 10, exhibited their most potent cytotoxic effects against colon cancer, leukemia, and melanoma cells.**

Wound Healing and Anti-Inflammatory Effect in Animal Models of *Calendula officinalis* L. Growing in Brazil.

Evid Based Complement Alternat Med. 2012;2012:375671. Epub 2012 Jan 24.

Parente LM, Lino Júnior Rde S, Tresvenzol LM, Vinaud MC, de Paula JR, Paulo NM. Abstract

Calendula officinalis is an annual herb from Mediterranean origin which is popularly used in wound healing and as an anti-inflammatory agent. In this study, the ethanolic extract, the dichloromethane, and hexanic fractions of the flowers from plants growing in Brazil were produced. **This experimental study revealed that *C. officinalis* presented anti-inflammatory and antibacterial activities as well as angiogenic and fibroplastic properties acting in a positive way on the inflammatory and proliferative phases of the healing process.**

Antioxidant properties of some hydroalcoholic plant extracts with anti-inflammatory activity.

Roum Arch Microbiol Immunol. 2003 Jul-Dec;62(3-4):217-27.

Herold A, Cremer L, Calugăru A, Tamaş V, Ionescu F, Manea S, Szegli G.

Abstract

The hydroalcoholic extracts of *Calendula officinalis*, *Hypericum perforatum*, *Plantago lanceolata* and *Glycyrrhiza glabra* which exhibited different anti-inflammatory activities were evaluated for the possible mode of action by studying their antioxidant potential. In the present study we investigated if standardized hydroalcoholic extracts of plants such as *Calendula officinalis*, *Hypericum perforatum*, *Plantago lanceolata* and *Glycyrrhiza glabra* produced by Hofigal Stock Company could modulate the respiratory burst of human activated neutrophils, as a consequence of their antioxidant capacity. **We demonstrated that *Hypericum perforatum* and *Calendula officinalis* hydroalcoholic extracts possessed a significant antioxidant activity** while *Plantago lanceolata* and *Glycyrrhiza glabra* hydroalcoholic extracts had a minor antioxidant status. These results confirm the potential of *Calendula officinalis* and *Hypericum perforatum* investigated hydroalcoholic extracts as medicinal remedies to be used in different inflammatory/allergic diseases. **These extracts could be a useful tool for obtaining new antioxidant/anti-inflammatory agents.**

***Calendula* extract: effects on mechanical parameters of human skin.**

Acta Pol Pharm. 2011 Sep-Oct;68(5):693-701.

Akhtar N, Zaman SU, Khan BA, Amir MN, Ebrahimzadeh MA.

Abstract

The aim of this study was to evaluate the effects of newly formulated topical cream of *Calendula officinalis* extract on the mechanical parameters of the skin by using the cutometer. The Cutometer 580 MPA is a device that is designed to measure the mechanical properties of the skin in response to the application of negative pressure. This non-invasive method can be useful for objective and quantitative investigation of age related changes in skin, skin elasticity, skin fatigue, skin hydration, and evaluation of the effects of cosmetic and antiaging topical products. Two creams (base and formulation) were prepared for the study. Both the creams were applied to the cheeks of 21 healthy human volunteers for a period of eight weeks. Every individual was asked to come on week 1, 2, 3, 4, 5, 6, 7, and 8 and measurements were taken by using Cutometer MPA 580 every week. Different mechanical parameters of the skin measured by the cutometer were; R0, R1, R2, R5, R6, R7, and R8. These were then evaluated statistically

to measure the effects produced by these creams. Using ANOVA, and t-test it was found that R0, and R6 were significant ($p < 0.05$) whereas R1, R2, R5, R7, R8 were insignificant ($p > 0.05$). **The instrumental measurements produced by formulation reflected significant improvements in hydration and firmness of skin.**

Phase III randomized trial of Calendula officinalis compared with trolamine for the prevention of acute dermatitis during irradiation for breast cancer

J Clin Oncol. 2004 Apr 15;22(8):1447-53.

Pommier P, Gomez F, Sunyach MP, D'Hombres A, Carrie C, Montbarbon X.

Abstract

PURPOSE: The effectiveness of nonsteroid topical agents for the prevention of acute dermatitis during adjuvant radiotherapy for breast carcinoma has not been demonstrated. The goal of this study was to compare the effectiveness of calendula (Pommade au Calendula par Digestion; Boiron Ltd, Levallois-Perret, France) with that of trolamine (Biafine; Genmedix Ltd, France), which is considered in many institutions to be the reference topical agent.

PATIENTS AND METHODS: Between July 1999 and June 2001, 254 patients who had been operated on for breast cancer and who were to receive postoperative radiation therapy were randomly allocated to application of either trolamine (128 patients) or calendula (126 patients) on the irradiated fields after each session. The primary end point was the occurrence of acute dermatitis of grade 2 or higher. Prognostic factors, including treatment modalities and patient characteristics, were also investigated. Secondary end points were the occurrence of pain, the quantity of topical agent used, and patient satisfaction.

RESULTS: The occurrence of acute dermatitis of grade 2 or higher was significantly lower (41% v 63%; $P < .001$) with the use of calendula than with trolamine. Moreover, patients receiving calendula had less frequent interruption of radiotherapy and significantly reduced radiation-induced pain. Calendula was considered to be more difficult to apply, but self-assessed satisfaction was greater. Body mass index and adjuvant chemotherapy before radiotherapy after lumpectomy were significant prognostic factors for acute dermatitis.

CONCLUSION: Calendula is highly effective for the prevention of acute dermatitis of grade 2 or higher and should be proposed for patients undergoing postoperative irradiation for breast cancer.

COMFREY

Comfrey (*Symphytum officinale*) is used to treat wounds and reduce the inflammation associated with sprains and broken bones. The roots and leaves contain allantoin, a substance that helps new skin cells grow. Topical preparations made with comfrey infusions are known to speed the healing process of the skin.

Studies

Effect of a blend of comfrey root extract (*Symphytum officinale* L.) and tannic acid creams in the treatment of osteoarthritis of the knee: randomized, placebo-controlled, double-blind, multiclinical trials.

J Chiropr Med. 2011 Sep;10(3):147-56. Epub 2011 Jul 22.

Smith DB, Jacobson BH.

Abstract

OBJECTIVE: The purpose of this study was to determine the effect of 2 concentrations of topical, comfrey-based botanical creams containing a blend of tannic acid and eucalyptus to a eucalyptus reference cream on pain, stiffness, and physical functioning in those with primary osteoarthritis of the knee.

METHODS: Forty-three male and female subjects (45-83 years old) with diagnosed primary osteoarthritis of the knee who met the inclusion criteria were entered into the study. The subjects were randomly assigned to 1 of 3 treatment groups: 10% or 20% comfrey root extract (*Symphytum officinale* L.) or a placebo cream.

RESULTS: Repeated-measures analyses of variance yielded significant differences in all of the Western Ontario and MacMaster Universities Osteoarthritis Index categories (pain $P < .01$, stiffness $P < .01$, daily function $P < .01$), **confirming that the 10% and 20% comfrey-based creams were superior to the reference cream.** The active groups each had 2 participants who had temporary and minor adverse reactions of skin rash and itching, which were rapidly resolved by modifying applications.

CONCLUSION: Both active topical comfrey formulations were effective in relieving pain and stiffness and in improving physical functioning and were superior to placebo in those with primary osteoarthritis of the knee without serious adverse effects.

Efficacy of a comfrey root (*Symphyti offic. radix*) extract ointment in the treatment of patients with painful osteoarthritis of the knee: results of a double-blind, randomised, bicenter, placebo-controlled trial.

Phytomedicine. 2007 Jan;14(1):2-10. Epub 2006 Dec 13.

Grube B, Grünwald J, Krug L, Staiger C.

Abstract

This randomised, double-blind, bicenter, placebo-controlled clinical trial investigated the effect of a daily application of 6g Kytta-Salbe f (3 x 2 g) over a 3 week period with patients suffering from painful osteoarthritis of the knee. The two hundred and twenty patients examined consisted of 153 women and 67 men of an average age of 57.9 years. On average, the complaints relating to osteoarthritis of the knee had persisted for 6.5 years. Two hundred and twenty patients were included in the Full Analysis Set (FAS) and safety collective, 186 (84.5%) in the Valid Case Analysis Set (VCAS) collective. In the course of the trial, the visual analog scale (VAS) total score (primary target value) in the verum group dropped by 51.6 mm (54.7%) and in the placebo group by 10.1 mm (10.7%). The average difference between the groups of 41.5 mm (95% confidence interval=34.8 to 48.2 mm) or 44.0% is significant ($p < 0.001$). The significance is confirmed through the evaluation of the diary, the VCAS evaluation and the separate assessment of the two centres. This also applies to the separate assessment of the VAS total score following pain at rest and on movement. The WOMAC (Western Ontario and McMaster Universities) total score (secondary target value) also improved similar to the VAS total score. At the end of the trial, a reduction by 60.4 mm (58.0%) was recorded for the verum group and a reduction of 14.7 mm (14.1%) for the placebo group. The average group difference of 45.7 mm (95% confidence interval=37.1 to 54.3 mm) or 43.9% is significant ($p < 0.001$). The difference between the treatment groups increased systematically and significantly, in parallel with the duration of the treatment. Thus, the superiority of the treatment with Kytta-Salbe f over that with the placebo is proven, even by means of the multi-factorial multivariate analysis for repetitive measurements. In respect of the explorative secondary target values SF-36 (quality of life), angle measurement (mobility of the knee), CGI (clinical global impression) and global assessment of efficacy by the physician and the patient, a significant superiority ($p < 0.001$ each) of the verum group over the placebo group was also proven. **The results suggest that the comfrey root extract ointment is well suited for the treatment of osteoarthritis of the knee. Pain is reduced, mobility of the knee improved and quality of life increased.**

Efficacy and tolerance of a comfrey root extract (Extr. Rad. Symphyti) in the treatment of ankle distorsions: results of a multicenter, randomized, placebo-controlled, double-blind study.

Phytomedicine. 2004 Sep;11(6):470-7.

Koll R, Buhr M, Dieter R, Pabst H, Predel HG, Petrowicz O, Giannetti B, Klingenburg S, Staiger C.

Abstract

Comfrey (*Symphytum officinale* L.) is a medicinal plant with anti-inflammatory, analgesic and tissue regenerating properties. In a double-blind, multicenter, randomized, placebo-controlled, group comparison study on patients suffering from unilateral acute ankle sprains ($n = 142$, mean age 31.8 years, 78.9% male), the percutaneous efficacy of an ointment of comfrey extract (Kytta-Salbe f, four treatments per day for 8 days) was confirmed decisively. Compared to placebo, the active treatment was clearly superior regarding the reduction of pain (tonometric measurement, $p < 0.0001$, as the primary efficacy variable) and ankle edema (figure-of-eight method, $p = 0.0001$). **Statistically significant differences between active treatment and placebo could also be shown for ankle mobility (neutral zero**

method), and global efficacy. Under active treatment, no adverse drug reactions were reported. The good local and global tolerance of the trial medication could also be confirmed. The study results are consistent with the known pre-clinical and clinical data concerning comfrey.

Comfrey extract ointment in comparison to diclofenac gel in the treatment of acute unilateral ankle sprains (distortions).

Arzneimittelforschung. 2007;57(11):712-6.

D'Anchise R, Bulitta M, Giannetti B.

Abstract

Objectives: A previously published study comparing the efficacy of comfrey extract to a commercial diclofenac (CAS 78213-16-8) preparation in the treatment of unilateral ankle sprains is critically re-evaluated. The study was designed to show non-inferiority of the comfrey extract. The data were re-evaluated for superiority according to CPMP guidelines. The study was an observer-blind, randomised, multi-centre clinical trial with two independent treatment groups "comfrey extract" and "diclofenac gel" (parallel group design) and included a total of 164 patients (82 in the comfrey group and 82 in the diclofenac group, intention-to-treat (ITT) analysis). Key variables were the area under the curve (AUC) from Visits 1 to 2 of the difference of the tenderness values contra-lateral minus injured side (primary variable), pain assessment (Visual Analogue Scale, VAS) at rest and on movement by patient, swelling (figure-of-eight method) and ankle movement (neutral zero method). On average (mean difference comfrey extract minus diclofenac), the AUC was +61.1 h x N/cm² greater for patients treated with comfrey extract compared to diclofenac treated patients (95% confidence interval: 19.08; 103.09 h x N/cm²). The difference between the two treatment groups was statistically significant (analysis of variance with factors "study drug", "centre", and "drug x centre interaction"). Safety was excellent in both treatment groups. **The re-evaluation of the data showed superiority of the plant based ointment over the diclofenac gel in the treatment of distortions. It is encouraging and impressive to realize that a natural product seems to be an effective and safe alternative to the standard topical treatment with diclofenac.**

GINGER

Ginger (*Zingiber officinale*) comes from the root of the ginger plant. Ginger's anti-inflammatory properties also help relieve pain and stimulate circulation of the blood. (Original formula only)

Studies

Comparing analgesic effects of a topical herbal mixed medicine with salicylate in patients with knee osteoarthritis.

Pak J Biol Sci. 2011 Jul 1;14 (13):715-9.

Zahmatkash M, Vafaenasab MR.

Abstract

Knee osteoarthritis is the most common cause of disability among people and it is a common disease of joints that can lead to cartilage damage. In this study the analgesic effects of a herbal ointment containing cinnamon, ginger, mastic (Saghez) and sesame oil is compared with Salicylate ointment in patients suffering from knee osteoarthritis. It was a double-blind randomized controlled trail study. Patients with diagnosed arthritis were involved in the study and they were divided in two groups via block randomization method. No statistical difference was observed between two groups regarding pain relief, morning stiffness and limited motion; nevertheless in repeated measurements during second, forth and sixth weeks in both groups the decreasing trend of these three indexes had been statistically significant (p < 0.0001). It seems that **using this herbal combination is clinically effective for patients suffering from knee osteoarthritis in order to decrease their pain, morning stiffness and limited motion;** its effect is comparable with Salicylate ointment.

Anti-inflammatory effects of [6]-shogaol: potential roles of HDAC inhibition and HSP70 induction.

Food Chem Toxicol. 2011 Nov;49(11):2734-40.Epub 2011 Aug 16.

Shim S, Kim S, Choi DS, Kwon YB, Kwon J.

Abstract

Ginger extracts have been reported to have anti-inflammatory, anti-oxidant, and anti-cancer effects.

[6]-shogaol is one of the most bioactive components of ginger rhizomes. This study assessed the [6]-shogaol's ability to protect cultured primary rat astrocytes against lipopolysaccharide (LPS)-induced inflammation. [6]-shogaol was shown to suppress the release of pro-inflammatory cytokines and decreased the level of inducible nitric oxide synthases (iNOS), cyclooxygenase-2 (COX-2), and phospho-NF-kB in LPS-treated astrocytes. Furthermore, [6]-shogaol treatment markedly up-regulated histone H3 acetylation and suppressed histone deacetylase (HDAC)1 expression. In addition, [6]-shogaol treatment also increased the expression of heat-shock protein (HSP)70. The neuroprotective, neurotrophic, and anti-inflammatory properties of [6]-shogaol may be translated to improvements in neurological performance. [6]-Shogaol's ability to inhibit HDAC was comparable to that of commonly used HDAC inhibitors Trichostatin A and MS275. Taken together, **our results suggest that [6]-shogaol can significantly attenuate a variety of neuroinflammatory responses by inducing HSP70, that is associated with HDAC inhibition in cortical astrocytes.**

Effects of ginger on primary knee osteoarthritis

Indian Journal of Rheumatology Jun 2006;1(1): 3-7.

Anousheh Haghighi, Nazfar Tavalaei, Mohammad Bagher Owlia

Abstract

Introduction: Nonsteroidal anti-inflammatory drugs are effective in relieving osteoarthritis pain, but because of their side effects, search continues for agents that might provide improvement in symptoms with minimal additional risk. Evidence from previous studies suggests that ginger can reduce osteoarthritis pain. The aim of this study is to compare the effects of indomethacin and ginger on relieving osteoarthritis pain.

Materials and Methods: A double blind, parallel group clinical trial was designed to evaluate the response of 52 patients with knee osteoarthritis to ginger and indomethacin.

Results: Analysis of the mean for pain on standing (based on 100 mm visual analogue scale) showed improvement in both groups (22.5 mm in indomethacin group and 23 mm in ginger group, P value = 0.1). Results of improvement in pain after walking 50 feet were similar in both groups (23.5 mm in indomethacin group and 21.4 mm in ginger group, P value = 0.34). Changes in total Western Ontario and MacMaster Universities Osteoarthritis Index score were significant in both groups (4.62 in indomethacin group and 3.39 in ginger group, P value = 0.65).

Conclusion: **Ginger is as effective as indomethacin in relieving symptoms of osteoarthritis with negligible side effects.** Therefore in patients with intolerance to indomethacin, ginger may be substituted.

RASPBERRY LEAF

Raspberry leaf (*Rubus idaeus*) preparations have an astringent or toning effect due to the tannins they contain. It is effective in the soothing of inflammation.

Study

The Bioactive Potential of Red Raspberry (*Rubus idaeus* L.) Leaves in Exhibiting Cytotoxic and Cytoprotective Activity on Human Laryngeal Carcinoma and Colon Adenocarcinoma.

J Med Food. 2012 Mar;15(3):258-68.Epub 2011 Nov14

Durgo K, Belščak-Cvitanović A, Stančić A, Franekić J, Komes D.

Abstract

In this article, the bioactive potential of red raspberry leaves, a by-product of this widely spread plant, mostly valued for its antioxidant-rich fruits, was determined. The polyphenolic profile and antioxidative properties of red raspberry leaf extract were determined and examined for potential biological activity. **The results obtained confirmed the biological activity of red raspberry leaf polyphenols and showed that this traditional plant can supplement the daily intake of valuable natural antioxidants, which exhibit beneficial health effects**

WHITE WILLOW

White willow (*Salix alba*) is derived from the bark of willow trees and contains salicin, an analgesic compound from which salicylic acid and later acetylsalicylic acid (otherwise known as aspirin) were derived. It is often referred to as “herbal aspirin” and people with aspirin allergies should use it with caution.

Studies

Aspirin throughout the ages: a historical review

Rev Med Interne. 2000 Mar;21 Suppl 1:8s-17s.

Lévesque H, Lafont O.

Abstract

Even at the beginning of the next millennium, aspirin will still offer surprises. Its relatively young pharmacological history compares with the early use of salicylate-containing plants since antiquity. The Assyrians and the Egyptians were aware of the analgesic effects of a decoction of myrtle or willow leaves for joint pains. **Hippocrates recommended chewing willow leaves for analgesia in childbirth and the Reverend Edward Stones is acknowledged as the first person to scientifically define the beneficial antipyretic effects of willow bark. At the beginning of the 19th century salicin was extracted from willow bark and purified. Although a French chemist, Charles Gerhardt, was the first to synthesize aspirin in a crude form, the compound was ignored, and later studied by Felix Hoffmann. He reportedly tested the rediscovered agent on himself and on his father, who suffered from chronic arthritis--a legend was born and Bayer Laboratories rose to the heights of the pharmacological world. First used for its potent analgesic, antipyretic and anti-inflammatory properties, aspirin was successfully used as an antithrombotic agent.** Sir John Vane elucidated aspirin's active mechanism as an inhibitor of prostaglandin synthetase and received the Nobel Prize in Medicine for this work in 1982. Two isoforms of cyclooxygenase (COX-1 and COX-2) have now been identified, each possessing similar activities, but differing in characteristic tissue expression. The COX enzyme is now a target of drug interventions against the inflammatory process. After two centuries of evaluation, aspirin remains topical, and new therapeutic indications are increasingly being studied.

An evaluation of the effect of a topical product containing salicin on the visible signs of human skin aging.

J Cosmet Dermatol.2010 Sep;9(3):196-201.

Gopaul R, Knaggs HE, Lephart JF, Holley KC, Gibson EM.

Abstract

BACKGROUND: There are many different visible signs of skin aging. These include wrinkles, hyperpigmentation, lack of firmness, poor texture, enlarged pores, and dryness. While there are many topical agents that claim to deliver wide-spectrum anti-aging benefits, few target all of the signs of skin aging to the same extent. Salicin, an extract from white willow bark, has been researched as a potent anti-inflammatory agent when taken orally. Based on unpublished in-house comprehensive consumer clinical studies, it is believed salicin may have anti-aging capabilities when applied topically to human skin.

AIM: This research evaluated the effect of a topical serum formulation containing salicin at 0.5% on the visible signs of skin aging.

RESULTS: Twenty-nine of 30 subjects successfully completed the study. No tolerability issues were reported. The clinical investigator found statistically significant improvements in wrinkles, tactile roughness, pore size, radiance, and overall appearance at week 1 time point ($P \leq 0.05$) against baseline and statistically significant improvements in mottled pigmentation, global firmness, and jaw-line contour at week 4 time point ($P \leq 0.05$) against baseline. Cutometry, corneometry, and ultrasound measurements showed significant improvements at week 12 time point ($P \leq 0.05$) against baseline.

CONCLUSION: Based on the findings from this study, it can be concluded that salicin has the ability to reduce the visible signs of skin aging when applied topically.

Herbal medicine for low back pain: a Cochrane review.

Spine (Phila Pa 1976). 2007 Jan 1;32(1):82-92

Erratum in Spine.2007 Aug 1;32(17):1931.

Gagnier JJ, van Tulder MW, Berman B, Bombardier C.

Abstract

STUDY DESIGN: A systematic review of randomized controlled trials.

OBJECTIVES: To determine the effectiveness of herbal medicine compared with placebo, no intervention, or "standard/accepted/conventional treatments" for nonspecific low back pain.

SUMMARY OF BACKGROUND DATA: Low back pain is a common condition and a substantial economic burden in industrialized societies. A large proportion of patients with chronic low back pain use complementary and alternative medicine (CAM) and/or visit CAM practitioners. Several herbal medicines have been purported for use in low back pain.

RESULTS: Ten trials were included in this review. Two high-quality trials utilizing *Harpagophytum procumbens* (Devil's claw) found strong evidence for short-term improvements in pain and rescue medication for daily doses standardized to 50 mg or 100 mg harpagoside with another high-quality trial demonstrating relative equivalence to 12.5 mg per day of rofecoxib. Two moderate-quality trials utilizing *Salix alba* (White willow bark) found moderate evidence for short-term improvements in pain and rescue medication for daily doses standardized to 120 mg or 240 mg salicin with an additional trial demonstrating relative equivalence to 12.5 mg per day of rofecoxib.

CONCLUSIONS: *Harpagophytum procumbens*, **Salix alba**, and **Capsicum frutescens seem to reduce pain more than placebo**. Additional trials testing these herbal medicines against standard treatments will clarify their equivalence in terms of efficacy.

Treatment of low back pain exacerbations with willow bark extract: a randomized double-blind study.

Am J Med. 2000 Jul;109(1):9-14.

Chrubasik S, Eisenberg E, Balan E, Weinberger T, Luzzati R, Conradt C.

Abstract

PURPOSE: Herbal medicines are widely used for the treatment of pain, although there is not much information on their effectiveness. This study was designed to evaluate the effectiveness of willow (*Salix*) bark extract, which is widely used in Europe, for the treatment of low back pain. SUBJECTS AND METHODS: We enrolled 210 patients with an exacerbation of chronic low back pain who reported current pain of 5 or more (out of 10) on a visual analog scale. They were randomly assigned to receive an oral willow bark extract with either 120 mg (low dose) or 240 mg (high dose) of salicin, or placebo, with tramadol as the sole rescue medication, in a 4-week blinded trial. The principal outcome measure was the proportion of patients who were pain-free without tramadol for at least 5 days during the final week of the study.

RESULTS: The treatment and placebo groups were similar at baseline in 114 of 120 clinical features. A total of 191 patients completed the study. The numbers of pain-free patients in the last week of treatment were 27 (39%) of 65 in the group receiving high-dose extract, 15 (21%) of 67 in the group receiving low-dose extract, and 4 (6%) of 59 in the placebo group ($P < 0.001$). The response in the high-dose group was evident after only 1 week of treatment. Significantly more patients in the placebo group required tramadol ($P < 0.001$) during each week of the study. One patient suffered a severe allergic reaction, perhaps to the extract.

CONCLUSION: Willow bark extract may be a useful and safe treatment for low back pain.

THE NATURAL MOISTURIZERS

ALOE VERA

Aloe vera is a transparent gel from the pulp of the meaty leaves of the aloe vera plant. It has been used topically for thousands of years to treat wounds, skin infections, burns, and many other skin conditions.

Studies

Anti-tumor activity of Aloe vera against DMBA/croton oil-induced skin papillomagenesis in Swiss albino mice.

J Environ Pathol Toxicol Oncol. 2010;29(2):127-35

Saini M, Goyal PK, Chaudhary G.

Abstract

Human populations are increasingly exposed to various carcinogens such as chemicals, radiation, and viruses in the environment. Chemopreventive drugs of plant origin are a promising strategy for cancer control because they are generally nontoxic or less toxic than synthetic chemopreventive agents, and can be effective at different stages of carcinogenesis. The present investigation was undertaken to explore the antitumor activity of topical treatment with aloe vera (*Aloe vera*) gel, oral treatment with aloe vera extract, and topical and oral treatment with both gel and extract in stage-2 skin carcinogenesis in Swiss albino mice induced by 7,12-dimethylbenz(a)anthracene (DMBA) and promoted croton (*Croton tiglium*) oil. **We conclude that aloe vera protects mice against DMBA/croton oil-induced skin papillomagenesis, likely due to the chemopreventive activity of high concentrations of antioxidants such as vitamins A, C, and E; glutathione peroxidase; several isozymes of superoxide dismutase; the minerals selenium and zinc; and polysaccharides in aloe vera**

Effect of aloe cream versus silver sulfadiazine for healing burn wounds in rats.

Acta Dermatovenerol Croat.2010;18(1):2-7.

Hosseinimehr SJ, Khorasani G, Azadbakht M, Zamani P, Ghasemi M, Ahmadi A.

Abstract

The management of burn injury remains a problem and it is the major cause of death and disability. The aim of this study was to evaluate the efficacy of Aloe vera cream in the treatment of thermal burn wounds and to compare these results with silver sulfadiazine in rats. The wound size was significantly smaller in aloe group as compared with other groups. Histologic comparison showed aloe to increase reepithelialization in burn wounds significantly as compared with other cream-treated wounds. **The results of this study showed aloe cream to significantly increase reepithelialization in burn wounds as compared with silver sulfadiazine.**

Aloe versus silver sulfadiazine creams for second-degree burns: a randomized controlled study.

Surg Today.2009;39(7):587-91.Epub 2009 Jun 28.

Khorasani G, Hosseinimehr SJ, Azadbakht M, Zamani A, Mahdavi MR.

Abstract

PURPOSE: Burn injury is associated with a high incidence of death and disability; yet its management remains problematic and costly. We conducted this clinical study to evaluate the efficacy of aloe vera cream for partial thickness burn wounds and compare its results with those of silver sulfadiazine (SSD). **METHODS:** Thirty patients with similar types of second-degree burns at two sites on different parts of the body were included in this study. Each patient had one burn treated with topical SSD and one treated with aloe cream, randomly. **RESULTS:** The rate of re-epithelialization and healing of the partial thickness burns was significantly faster in the site treated with aloe than in the site treated with SSD (15.9 +/- 2 vs 18.73 +/- 2.65 days, respectively; $P < 0.0001$). The sites treated with aloe were completely healed in less than 16 days vs 19 days for the sites treated with SSD.

CONCLUSION: These results clearly demonstrated the greater efficacy of aloe cream over SSD cream for treating second-degree burns.

APRICOT KERNEL OIL

Apricot kernel oil comes from the apricot tree (*Prunus armeniaca*) and is a member of the rose family originating in Central and East Asia. Apricot kernel oil is very mild natural oil, often used in baby products because of its gentle nature. Rich in essential fatty acids like oleic and linoleic acid, a polyunsaturated fatty acid, apricot kernel oil is high in vitamin A. It also helps skin retain elasticity, clarity, and suppleness.

AVOCADO OIL

Avocado oil comes from the fruit of the avocado tree (*Persea americana*) and is a nourishing oil for the skin and hair. Avocado oil is said to be rich in essential and trace minerals and Vitamin A. It is also high in sterolins, which are reputed to reduce age spots and help heal sun damage and scars. It is the sterolins (also called plant steroids) in the oil that help to soften the skin and impart a superior moisturizing effect.

Study

Vitamin B(12) cream containing avocado oil in the therapy of plaque psoriasis.

Dermatology. 2001;203(2):141-7.

Stücker M, Memmel U, Hoffmann M, Hartung J, Altmeyer P.

Abstract

BACKGROUND: There are already many effective topical therapies available for use in the treatment of chronic plaque psoriasis. Unfortunately, these treatments are often associated with a rather significant risk of undesirable effects.

OBJECTIVE AND METHODS: In this randomized, prospective clinical trial, the effects of the vitamin D(3) analog calcipotriol were evaluated against those of a recently developed vitamin B(12) cream containing avocado oil in an intraindividual right/left-side comparison. The trial population consisted of 13 patients, 10 men and 3 women, with chronic plaque psoriasis.

RESULTS: While the efficacy of the calcipotriol preparation reached a maximum in the first 4 weeks and then began to subside, the effects of the vitamin B(12) cream containing avocado oil remained at a constant level over the whole observation period. This would indicate that the vitamin B(12) preparation containing avocado oil may be suitable for use in long-term therapy, a hypothesis further supported by the fact that the investigator and the patients assessed the tolerability of the vitamin B(12) cream containing avocado oil as significantly better in comparison with that of calcipotriol.

CONCLUSION: The results of this clinical trial provide evidence that the recently developed vitamin B(12) cream containing avocado oil has considerable potential as a well-tolerated, long-term topical therapy of psoriasis

BEESWAX

Beeswax is a natural emulsifier as well as one of the oldest and purest waxes. Beeswax is used in creams, candles, lipsticks and other cosmetics.

CANDELILLA WAX

Candelilla wax is a wax derived from the leaves of the small candelilla shrub (*Euphorbia antisyphilitica*) native to northern Mexico and the southwestern United States. It is one of the essential ingredients that provides the distinctive ChopSaver smooth glide and feel.

CARNAUBA WAX

Carnauba wax, also called Brazil wax or palm wax, is a wax from the leaves of a palm tree (*Copernicia prunifera*) native to Brazil. It is often called "queen of waxes" and usually comes in the form of hard yellow-brown flakes.

CASTOR OIL

Castor Oil comes from the bean of the castor plant (*Ricinus communis*) bean. It is an anti-inflammatory and anti-oxidant oil which has been used for centuries for its therapeutic benefits which are believed to be derived from its high concentration of unsaturated fatty acids.

Study

Effect of ricinoleic acid in acute and subchronic experimental models of inflammation.

Mediators Inflamm. 2000; 9(5): 223–228.

C Vieira, S Evangelista, R Cirillo, A Lippi, C A Maggi, and S Manzini

Abstract

Observational studies indicate that topical application of ricinoleic acid (RA), the main component of castor oil, exerts remarkable analgesic and anti-inflammatory effects. Pharmacological characterization has shown similarities between the effects of RA and those of capsaicin, suggesting a potential interaction of this drug on sensory neuropeptide-mediated neurogenic inflammation. The aim of this study was to assess RA anti-inflammatory activities in comparison with capsaicin in several models of acute and subchronic inflammation. Either in mouse paw or in guinea-pig eyelid, capsaicin but not RA by itself produced a slight hyperemia and activation of a behavioural response (e.g. scratching of the eyelids). **On the basis of the present results, RA may be seen as a new capsaicin-like, non-pungent anti-inflammatory agent suitable for peripheral application.**

GRAPESEED OIL

Grapeseed oil is extracted from the seeds of wine grapes (*Vitis vinifera*). It has a wide range of applications in the cosmetic industry for its emollient property. Grapeseed oil also contains linoleic acid and provides nourishment to the skin and aids in skin repair. It is an important ingredient in many hair care products, lip balms, creams and lotions.

Studies

Wound-healing properties of the oils of *Vitis vinifera* and *Vaccinium macrocarpon*.

Phytother Res. 2011 Aug;25(8):1201-8.doi:10.1002/ptr.3363.Epub 2011 Feb 9.

Shivananda Nayak B, Dan Ramdath D, Marshall JR, Isitor G, Xue S, Shi J.

Abstract

Vitis vinifera (grape) and *Vaccinium macrocarpon* (cranberry) are well known medicinal plants; most of the pharmacologically active phytochemicals have been isolated from the skin, fruit juice, fermented extract and alcohol fractions of the plants above. Here, the pharmacological properties of the phytochemical constituents present in oils of cranberry and grape were investigated. The oil of grape and cranberry has been evaluated for their wound healing activity by using an excision wound model in rats. On day 13, animals treated with cranberry oil exhibited a (88.1%) reduction in the wound area compared with grape-oil treated (84.6%), controls (74.1%) and standard group animals (78.4%) ($p < 0.001$). The hydroxyproline content of the granulation tissue was significantly higher in the animals treated with cranberry and the grape-oil ($p < 0.000$). **Comparative investigation of the curative properties of the oils of *V. vinifera* and *V. macrocarpon* revealed a significant result which suggests their wound-healing potential.**

Bactericidal effect of grape seed extract on methicillin-resistant *Staphylococcus aureus* (MRSA).

J Toxicol Sci. 2010 Jun;35(3):357-64.

Al-Habib A, Al-Saleh e, Safer AM, Afzal M.

Abstract

This study was conducted to measure the antibacterial activity of grape (*Vitis vinifera* L; Vitaceae) seed extract against methicillin-resistant *Staphylococcus aureus* (MRSA). Grape seed and skin extracts were tested for antibacterial activity against forty-three strains of MRSA by gel diffusion, growth and respirometric studies. **All MRSA strains were found to be sensitive to grape seed extract.** Complete inhibition of all bacterial strains tested was observed at a concentration of 3 mg/ml crude grape seed proanthocyanidins extract (GPSE), equivalent of 20.7 microg/ml flavonoid content. Antibacterial activity was bactericidal as shown by a disruption of the bacterial cell wall in scanning and transmission electron microscopy. Grape seed extract is known to be rich in potent antioxidant polyphenolics that could show antibacterial activity. Phenolic compounds in the grape seed extract were assayed by Folin-Ciocalteu's reagent. **The considerable antibacterial activity of commonly available grape seed extract could signify a major advancement in the treatment of MRSA diseases.**

MANGO BUTTER

Mango butter comes from the fruit of mango trees (*Mangifera indica*). It is a natural emollient and has high oxidative, wound healing, and regenerative properties. Mango Butter has been traditionally used in the rainforests and tropics for its ability to soften, sooth, moisturize and protect the skin. It restores flexibility and reduces degeneration of skin cells, and many believe it is an effective treatment for wrinkles.

Study

Formulation and evaluation of exotic fat based cosmeceuticals for skin repair.

Indian J Pharm Sci. 2008 Jul-Aug;70(4):539-42

Mandawgade SD, Patravale VB.

Abstract

Mango butter was explored as a functional, natural supplement and active skin ingredient in skin care formulations. A foot care cream was developed with mango butter to evaluate its medicinal value and protective function in skin repair. **Results of the clinical studies demonstrated complete repair of worn and cracked skin in all the human volunteers. Furthermore, foot care cream exhibited significant healing response in both the wound models. The project work could be concluded as establishment of high potential for mango butter to yield excellent emolliency for better skin protection.** Improving the product features and medicinal functionality further validate mango butter as a specialty excipient in development of cosmeceuticals and has an immense value for its commercialization.

SHEA BUTTER

Shea butter is a natural plant extract with exceptional moisturizing properties which comes from the karite or shea tree (*Vitellaria paradoxa*) in Africa. The tree produces nuts for up to 200 years after reaching maturity. Shea butter is a particularly effective moisturizer due to its high content of fatty acids which are needed to retain skin moisture and elasticity.

Studies

The excipient properties of shea butter compared with vaseline and lanolin.

J Pharm Belg. 2003;58(3):81-4.

Thioune O, Kouma B, Diarra M, Diop AB, Lô I.

Abstract

A shea butter ointment containing 3% aureomycin (clortetracyclin hydrochloride) was prepared and some of its macroscopic and microscopic characteristics were evaluated. Then, the release of the active ingredient was compared by UV spectrophotometry with those obtained when excipients such as petroleum jelly and lanoline were used. Results had shown that the shea butter ointment had satisfactory characteristics. **In the other hand, it was found that shea butter released the aureomycin easily and at a faster rate than the other excipients**

Anti-inflammatory and chemopreventive effects of triterpene cinnamates and acetates from shea fat.

J Oleo Sci. 2010;59(6):273-80.

Akihisa T, Kojima N, Kikuchi T, Yasukawa K, Tokuda H, T Masters E, Manosroi A, Manosroi J.

Abstract

Four triterpene acetates, alpha-amyrin acetate (1a), beta-amyrin acetate (2a), lupeol acetate (3a), and butyrospermol acetate (4a), and four triterpene cinnamates, alpha-amyrin cinnamate (1c), beta-amyrin cinnamate (2c), lupeol cinnamate (3c), and butyrospermol cinnamate (4c), were isolated from the kernel fat (n-hexane extract) of the shea tree (*Vitellaria paradoxa*; Sapotaceae). Upon evaluation of these eight triterpene esters for inhibitory activity against 12-O-tetradecanoylphorbol-13-acetate (TPA)-induced inflammation (1 microg/ear) in mice, all of the compounds tested exhibited marked anti-inflammatory activity, with ID₅₀ values in the range of 0.15-0.75 micromol/ear, and among which compound 3c showed the highest activity with ID(50) of 0.15 micromol/ear. The biological activities of triterpene acetate and cinnamate esters, together with the exceptionally high levels of these triterpenes in shea fat, indicate that **shea nuts and shea fat (shea butter) constitute a significant source of anti-inflammatory and anti-tumor promoting compounds.**

VITAMIN E

Vitamin E, added to lotions, creams, and other skin care products, as well as taken orally, plays a role in the anti-aging of skin by reducing the appearance of fine lines and wrinkles.

Studies

Potential of herbs in skin protection from ultraviolet radiation.

Pharmacogn Rev. 2011 Jul;5(10):164-73.

Korać RR, Khambholja KM.

Abstract

Herbs have been used in medicines and cosmetics from centuries. Their potential to treat different skin diseases, to adorn and improve the skin appearance is well-known. As ultraviolet (UV) radiation can cause sunburns, wrinkles, lower immunity against infections, premature aging, and cancer, there is permanent need for protection from UV radiation and prevention from their side effects. Herbs and herbal preparations have a high potential due to their antioxidant activity, primarily. **Antioxidants such as vitamins (vitamin C, vitamin E), flavonoids, and phenolic acids play the main role in fighting against free radical species that are the main cause of numerous negative skin changes.** Although isolated plant compounds have a high potential in protection of the skin, whole herbs extracts showed better potential due to their complex composition. Traditional use of plant in medication or beautification is the basis for researches and making new trends in cosmetics. This review covers all essential aspects of potential of herbs as radioprotective agents and its future prospects

Evidence for the photoprotective effects of vitamin E.

Photochem Photobiol. 1993 Aug;58(2):304-12.

Fryer MJ.

Abstract

The antioxidant vitamin E (alpha-tocopherol) may protect both animal and plant cell membranes from light-induced damage. The various biochemical and biophysical modes of protection are considered. An examination is made of the evidence that vitamin E plays an important prophylactic role against a number of serious light-induced diseases and conditions of the eye (cataractogenesis and retinal photodeterioration) and skin (erythrocyte photohemolysis, photoerythema, photoaging and photocarcinogenesis) that are mediated by photooxidative damage to cell membranes.

Vitamin E gel reduces time of healing of digital ulcers in systemic sclerosis.

Clin Exp Rheumatol. 2009 May-Jun;27(3 Suppl 54):51-4

Fiori G, Galluccio F, Braschi F, Amanzi L, Miniati I, Conforti ML, Del Rosso A, Generini S, Candelieri A, Magonio A, Goretti R, Rasero L, Matucci-Cerinic M.

Abstract

BACKGROUND: In systemic sclerosis (SSc), digital ulcers (DU) are painful, difficult to heal and frequently infected, thus greatly affecting quality of life and increasing SSc-related disability. Vitamin E has been previously used in cutaneous lesions for its antioxidant and anti-inflammatory effects.

OBJECTIVES: To study the healing effect of D-alpha-tocopheryl acetate (acetic ester of alpha-tocopherol) (VE) gel on DU of SSc patients.

METHODS: 27 SSc patients with a total of 86 DU were enrolled in an open pilot study. The patients were randomly assigned to two groups: 15 patients were treated until DU healing with the local standard ulcer care protocol with the application of vitamin E gel (experimental group), while 12 patients were treated with standard ulcer care protocol only (control group). In both groups, DU were treated twice a week and pain was scored by a NRS (numeric rating scale). In both groups the cost of medications was analyzed.

RESULTS: VE induced a faster healing of DU in respect to controls (13.22+/-2.72 weeks, versus 20.94+/-3.65; p<0.0001) with a lower number of medications (26.18+/-5.63 vs. 41.88+/-7.31; p<0.0001). Resolution of pain was faster in experimental (17.82+/-4.59 medications) than in controls (26.26+/-19.16 medications) (p=0.0022). In the experimental group, the cost of medications was significantly lower (6,919.15 euros/patient) than in the control group (11,056.32 euros/patient).

CONCLUSION: The application of VE reduces time of healing and has a faster resolution of pain, with a significant reduction of costs. Topical VE may improve the management of DU in SSc.

THE NATURAL FRAGRANCE

The distinctive ChopSaver fragrance is a mixture of essential oils of lemon, lime, grapefruit and orange. For many people, the pleasant fragrance is just as important as the product's therapeutic qualities.

