PLASTIC SURGERY AUSTIN
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Arnica

Scientific Name
Arnica chamissonis; *Arnica cordifolia*; *Arnica fulgens*; *Arnica montana*; *Arnica sororia*

Common Name(s)
Arnica flos; Leopard's bane; Mountain snuff; Mountain tobacco; Sneezewort

Clinical Overview: Uses
Arnica and its extracts have been widely used in folk and homeopathic medicine as a treatment for acne, boils, bruises, rashes, sprains, pains, and wounds. There does not appear to be sufficient evidence to support the use of arnica as an anti-inflammatory or analgesic agent or in the prevention of bruising. Heterogeneity of doses, delivery forms, and indications in available clinical studies also makes generalization difficult.

Clinical Overview: Dosing
Arnica is classified as an unsafe herb by the US Food and Drug Administration (FDA) because of its toxicity and should not be administered orally or applied to broken skin where absorption can occur. No consensus exists on topical dosing, and evidence from clinical trials is lacking to support therapeutic dosing. In homeopathic use, less concentrated strengths, such as 12C, 200C, 1M (1,000C), and 10M (10,000C), are recommended for use before and after surgery.

Clinical Overview: Contraindications
Contraindications have not been identified.

Clinical Overview: RNP Pregnancy/Lactation
Avoid use. Uterine stimulation has been documented.

Clinical Overview: Interactions
None well documented.

Clinical Overview: Adverse Reactions
Homeopathic doses of arnica are unlikely to result in any adverse reactions because of the small amount ingested. Arnica irritates mucous membranes and causes stomach pain, diarrhea, and vomiting. Allergy and contact dermatitis have been reported.

Clinical Overview: Toxicology
The plant is poisonous and ingestion can cause gastroenteritis, dyspnea, cardiac arrest, and death. The flowers and roots of the plant have caused vomiting, drowsiness, and coma when eaten by children.

Botany
Arnica, a perennial native to the mountainous regions of Europe and southern Russia, grows from 0.3 to 0.6 m tall. Oval-shaped, opposite leaves form a basal rosette at the soil surface. Arnica has bright yellow, daisy-like flowers that, when dried, are the primary parts used medicinally. Roots and rhizomes may also be utilized.

History
Internal and external preparations made from the flowering heads of arnica have been used medicinally for hundreds of years. Arnica was used extensively in European folk medicine, and alcoholic tinctures were produced by early North American settlers to treat sore throats, as a febrifuge, and to improve circulation. Homeopathic uses include the treatment of surgical or accidental trauma, use as an analgesic, and the treatment of postoperative thrombophlebitis and pulmonary emboli. Arnica has been applied externally to acne, bruises, sprains, and muscle aches. In addition, it has been used as a general topical counterirritant and a CNS stimulant, as well as an antibacterial for abrasions and gunshot wounds. Arnica is also an ingredient in hair tonics, dandruff treatments, perfumes, and cosmetics.

Uses and Pharmacology
Controversy exists concerning evaluations of the clinical efficacy of homeopathic arnica. Criticisms of clinical trials include publication bias, sample size, and intention-to-treat analysis. Although topical arnica preparations differ from homeopathic arnica, outcome measures such as pain, inflammation, and coagulation assays have been used as a standard measurement of effect.

Inflammation
Clinical data
A systematic review of trials prior to October 1997 found no evidence for arnica in reducing inflammation. Additional trials revealed no difference in swelling or wrist circumference compared with placebo following carpal tunnel surgery, equivalence (no difference), and no difference in swelling after knee surgery except for cruciate ligament surgery (pooled data from 3 individual trials). In 1 study in post-rhinoplasty ecchymosis and edema, patients who received arnica had less edema during the early postoperative period compared with controls, suggesting that arnica has a beneficial effect on post-rhinoplasty inflammation. Overall, there is insufficient evidence to support the use of arnica as an anti-inflammatory agent.

Pain

Clinical data

A systematic review of trials prior to October 1997 found no evidence for arnica as an analgesic. Studies evaluating the efficacy of arnica gel compared with ibuprofen gel in osteoarthritis suggest equivalence. However, methodological weaknesses exist in the studies. No difference in pain following knee or foot surgery, tonsillectomy, or surgery for carpal tunnel syndrome has been found between arnica and placebo.

Bruising/Ecchymosis

Clinical data

No difference was found between arnica and placebo for laser-induced or surgical bruising, despite arnica being widely recommended for this purpose. Following rhytidectomy (face-lift), a decrease in bruising was observed on days 1 and 7, but not days 5 and 10. Another study in patients with upper eyelid dermatochalais undergoing blepharoplasty found no benefit in size or severity of ecchymosis or ease of recovery with *A. montana* compared with placebo. An open-label study evaluated the use of arnica powder in umbilical cord care. No infections were noted and stump detachment was unaffected; however, the study had no comparator agent.

Exercise

Clinical data

Pooled data from 2 trials evaluating muscle soreness and cell damage in marathon runners reached statistical significance for muscle soreness but showed no difference in relevant cellular enzymes. A subsequent trial reported no difference for muscle soreness in marathon runners. A small study found reductions in pain 3 days after exercise but no effect on markers of muscle damage or inflammation with topically applied arnica. In a study of 53 participants, topical arnica increased calf muscle pain at 24 hours after exercise but not at 48 hours.

Other uses

Immune modulation has been observed in animal studies and in vitro. Antioxidant effects and in vitro cytotoxic effects have been reported.

Dosing

Arnica is classified as an unsafe herb by the FDA because of its toxicity and should not be administered orally or applied to broken skin where absorption can occur.

Oral

A review of practice patterns of facial plastic surgeons found a commonly cited regimen of *A. montana* 500 mg capsules taken orally every 8 hours on the day of surgery and continued for 3 days.

Topical
No consensus exists on topical dosing, and evidence from clinical trials is lacking to support therapeutic dosing. Experiments show that absorption of active chemical constituents is dependent on the concentration and form of preparation. Microemulsion preparations exhibit greater absorption, as do more concentrated forms of the tincture. Creams typically contain arnica oil 15% and salves have arnica oil 20% to 25%.

Homeopathic
Clinical evidence is lacking to support therapeutic dosing. Less concentrated strengths, such as 12C, 200C, 1M, and 10M, have been used in surgery. Because paradoxical effects, such as causing bleeding instead of preventing bruising, can be observed, pre- and postoperative homeopathic use of arnica should be limited. Designated with a C (or left blank in Europe) after the remedy name, C potencies are considered medium potencies. C potency is often used for seasonal problems and chronic conditions. Designated with an M after the remedy name, M potencies are considered high potencies. M potency is used by practitioners for constitutional treatment.

RNP Pregnancy/Lactation
Avoid use. Uterine stimulation has been documented. Arnica was traditionally used as an abortifacient, possibly due to oxytocic action of constituent sesquiterpene lactones. Homeopathic arnica is widely used after childbirth to reduce bruising and postpartum bleeding.