



Monograph

Ruscus aculeatus (Butcher's Broom)

Description

Ruscus aculeatus (butcher's broom) is a member of the Liliaceae family and is native to Mediterranean Europe and Africa. It has tough, green, erect, striated stems that send out numerous short branches and very rigid leaves that are actually extensions of the stem and terminate in a single sharp spine. The small greenish-white flowers grow from the center of the leaves and bloom in the early spring. The thick root, typically

collected in autumn, is used medicinally. The root has no odor, but has an initially sweetish taste that then turns slightly acid.

Constituents and Mechanisms of Action

The primary active ingredients are the steroidal saponins ruscogenin and neoruscogenin, but other constituents have been isolated, including steroidal sapogenins and saponins, sterols, triterpenes, flavonoids, coumarins, sparteine, tyramine, and glycolic acid.¹⁻⁵ Although both the above- and below-ground parts of the plant contain ruscogenins, the concentration is higher in the root,⁶ the part traditionally used medicinally.

One animal study⁷ and numerous *in vitro* studies⁸⁻¹³ indicate butcher's broom reduces vascular permeability. The ruscogenins from butcher's broom showed remarkable anti-elastase activity *in vitro* but were inactive against hyaluronidase.¹⁴ These actions help explain the herb's apparent utility in patients with chronic venous insufficiency.

Animal and *in vitro* studies show butcher's broom to have a vasoconstrictive effect. The mechanism of this effect remains somewhat unclear. Some studies indicate direct postjunctional alpha-1 and alpha-2 adrenergic receptor activation by its steroidal saponins;⁷ others indicate vasoconstriction is due to alpha-adrenergic blockade.⁸ Hamster cheek pouch studies show that prazosin and diltiazem block butcher's broom's inhibition of histamine-induced permeability increase while rauwolscine does not, indicating that butcher's broom's venoconstrictive effect is mediated by calcium and alpha 1-adrenergic receptors at the microcirculatory level.^{15,16}

Clinical Indications

The best-researched indications for butcher's broom are venous insufficiency, edema, premenstrual syndrome (PMS), and hemorrhoids. A single trial indicates butcher's broom may be useful in preventing diabetic retinopathy.

Venous Insufficiency/Varicosities

Four double-blind, placebo-controlled trials, and five open trials demonstrated an improvement in venous insufficiency symptoms such as itching, ankle diameter, tension of the leg, cramping, and malleolar edema.¹⁷⁻²⁴ One open-label, randomized clinical trial showed butcher's broom to be safe and more effective than rutoside in the treatment of patients with chronic venous insufficiency.²⁵ Most of these studies have insufficient sample sizes and other design flaws.

Edema

Butcher's broom may be beneficial for patients with edema of various types. One double-blind, placebo-controlled²⁶ and one open trial²⁷ showed butcher's broom to have a significant, positive effect in patients with lymph edema. In a small, uncontrolled trial, butcher's broom significantly improved symptoms in patients with edema secondary to calcium antagonist treatment (nifedipine and nicardipine) for hypertension.¹⁰ In a randomized, double-blind, multi-center study of healthy volunteers (20 volunteers) and patients with chronic venous insufficiency (80 patients) or post-thrombotic syndrome (60 patients), butcher's broom alone appeared to increase lymphatic drainage and capillary sealing action.¹² Patients on butcher's broom showed a continuous decrease in ankle and leg volume over the course of the study, and the authors concluded this indicated a slow, reparative process that was not complete at the end of the study. Finally, a meta-analysis of three randomized, double-blind, cross-over studies of various products concluded butcher's broom both increases venous tone and reduces capillary filtration, resulting in an increase in lymph flow in patients with edema.¹³ This action may explain the results of a small, double-blind, randomized study of butcher's broom's ability to speed healing of sprains and contusions.²⁸ In this study, using a butcher's broom/sweet clover cream, the swelling of the injured leg measured against the uninjured leg was significantly reduced. The cream also significantly reduced the subjective perception of pain.

Premenstrual Syndrome

In a randomized, double-blind trial involving women with PMS, butcher's broom rapidly reduced symptoms of mastalgia and mood disorders, and showed a trend toward improving ankle edema.¹¹

Hemorrhoids

Butcher's broom has been shown to have a significant effect on patients with hemorrhoids in an open trial, with 75 percent of participating physicians rating butcher's broom's efficacy as good or excellent.²⁹

Diabetic Retinopathy

Butcher's broom was shown to be as or more effective than troxerutin for microangiopathic complications, including retinopathy, in 60 patients with type 2 diabetes.³⁰

Orthostatic Hypotension

Researchers have theorized that *Ruscus*, because of its proven venotonic effects, may be helpful as a treatment for chronic orthostatic hypotension.³¹ Unlike many of the drug therapies for orthostatic hypotension, butcher's broom does not cause supine hypertension.

Butcher's Broom in Combination with other Botanicals

Many of the clinical trials on butcher's broom use commercial products that combine butcher's broom with trimethylhesperidine chalcone and ascorbic acid. Some studies combine butcher's broom with *Melilotus officinalis* (sweet clover, melilot) extract. This, of course, confuses the scientific evidence of butcher's broom's actual effect. While studies indicate butcher's broom has an action independent of these added compounds, and some studies indicate butcher's broom alone may have a stronger effect,³² other studies indicate the combinations may have a positive synergistic effect.³³

Dose and Toxicity

Dosage for the alcoholic extract of the whole plant is 0.5-1.5 mL three times daily.³⁴ Dosage for capsules standardized for ruscogenins (as determined by the total of neoruscogenin and ruscogenin) is 7-11 mg,³⁵ although some experts recommend a higher dose of 16.5-33 mg of total ruscogenins three times daily.³⁶ Commercial butcher's broom capsules (known variously as Cyclo 3 Fort®, Phlebodril® or Fabroven® and containing butcher's broom root combined with trimethylhesperidine chalcone and ascorbic acid) are used in many of the clinical studies. These products contain between 30-150 mg of butcher's broom per capsule, and a typical dose is 2 to 3 capsules three times daily.

Most reviewers consider butcher's broom to be safe and list no contraindications.^{35,37} Contact dermatitis has occasionally been reported in patients topically exposed to butcher's broom.^{38,39} Nausea is uncommon with butcher's broom.³⁷ In one study of Cyclo 3 Fort (3 capsules three times daily), patients experienced edema, nausea, and abdominal pain significant enough to prompt volunteers to discontinue Cyclo 3 Fort in 3.5 percent of the patients.²⁴

There may be theoretical reasons to avoid combining butcher's broom with alpha-adrenergic antagonist antihypertensive/spasmolytic drugs such as prazosin and terazosin.¹ Tyramine from butcher's broom could theoretically precipitate a hypertensive crisis when combined with these drugs. Similarly, tyramine-containing herbs should theoretically not be combined with monoamine oxidase inhibitors to avoid hypertensive crises. Preclinical information about butcher's broom's pharmacodynamics also suggests the possibility of interference with the efficacy of alpha-blockers. No clinical trials have directly addressed this issue.

There is insufficient data on the use of butcher's broom in pregnancy, although one uncontrolled trial of 20 pregnant women taking butcher's broom daily for venous insufficiency followed both fetal and post-birth indices and found no embryotoxic or other adverse effects.¹⁹

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