

Medicago sativa

Alfalfa

Indications

Hypercholesterolemia, hyperglycemia, and menopausal symptoms (e.g., hot flashes, poor bone density).

Mechanism of Action

Some of the benefits on lipids and glucose metabolism are believed to occur via mechanisms involving hormonal effects.¹ *Medicago* is a genus of plants in the legume family whose species are high in phytosterols and phytoestrogens, represented by naturally occurring steroid-like molecules such as isoflavones (genistein, daidzein) and coumestans (coumestrol), all of which have all been shown to have estrogen-modulating effects.²

Combined with the calcium, vitamin K,³ vitamins D2 and D3,⁴ and other nutrients and constituents that the plant naturally contains, *Medicago* may support bone density and help alleviate menopausal symptoms⁵ in part because of its phytoestrogenic activity. Genistein has been shown to stimulate bone formation, inhibit bone resorption, and prevent bone loss in ovariectomized rat models.⁶ Genistein at 54 mg/day for 1 or 2 years has also been demonstrated in a few randomized, double-blind, placebo-controlled studies to be effective in preventing bone loss in postmenopausal women.⁷

Postmenopause, lipids and blood sugar may elevate and bone density may diminish; therefore, *Medicago* may offer some protective effects.

Evidence-Based Research

One study tested the efficacy of a combination of sage (*Salvia officinalis*) and *Medicago sativa* (also known as lucerne or alfalfa) in the treatment of hot flashes and night sweats in 30 menopausal women. It is generally accepted that hot flashes reflect adaptation of the body to estrogen deprivation that affects various central neurotransmitters. Hot flashes and night sweats disappeared in 20 women, 4 women showed good improvement, and the other 6 showed a reduction in symptoms. The authors concluded this herbal combination seemed to have a central, slight antidopaminergic action without side effects, and it was considered an effective agent in the treatment of menopausal symptoms.⁸ No clinical trials for menopause by using *Medicago* alone have been reported.

Animal studies have suggested *Medicago* to be effective in the treatment of hyperlipidemia^{5,9,10,11} and hyperglycemia; however, more rigorous human studies are required. Saponins found within *Medicago* are a complex mixture of triterpene glycosides that show a broad spectrum of biological properties. In one study, hyperlipidemic rats given *Medicago* extract over 7 weeks showed significant improvements in

serum lipid levels and total cholesterol, suggesting a possible mechanism with enzymes involved in cholesterol biosynthesis, uptake, and excretion pathways.¹²

Another animal model using an aqueous *Medicago* extract in diabetic mice demonstrated stimulation of insulin secretion from pancreatic B-cell lines. Sequential extraction with solvents revealed insulin-releasing activity in both methanol and water fractions, indicating a cumulative effect of more than one extract constituent. The authors concluded the presence of antihyperglycemic, insulin-releasing, and insulin-like activity to be confirmed in *Medicago*.¹³

Safety in Pregnancy and Breastfeeding

No human studies or animal studies on *Medicago* in pregnancy or lactation have been conducted; however, based on the nutritive, food-like nature of the plant, most herbalists consider *Medicago* to be safe during pregnancy. Farmers do not restrict livestock from feeding on *Medicago* during pregnancy or lactation; in fact, *Medicago* is often increased in the feed of pregnant mares as it is more nutritious than grass hay and believed to benefit livestock. One study found that *Medicago* feed increased milk yield, lowered fat, and increased milk protein in dairy cows.¹⁴

General Safety

Moderate consumption of *Medicago* leaves in teas and capsules is generally considered safe and without significant side effects. Aggravation of lupus, or promotion of lupus-like symptoms have been reported from the ingestion of large amounts of *Medicago* seeds and sprouts, an action blamed on the amino acid canavanine.¹⁵ *Medicago* leaves are used by herbalists in teas, tinctures, and encapsulated supplements, and they contain only trace amounts of canavanine. One study found *Medicago* tablets to contain on average 25.0–33.0 µg of canavanine per tablet.¹⁶

Dosage

Medicago is generally considered safe at doses of 300 mg and up to 1500 mg/day. Traditionally, several grams of powdered *Medicago*, and even up to 10 g/day of dried leaf powder, have been used.

Traditional Uses

Medicago sativa (also known as lucerne or alfalfa) is a well-known nutritious herb with a long history of use as a livestock feed, a medicinal herb and food, and more recently, a dietary supplement.

Being a food-like and nutritious plant, the traditional uses for *Medicago* are extensive, being used to promote diuresis in kidney diseases, improve strength and fertility in livestock, treat diabetes and long-term consequences such as elevated lipids and obesity, and improve chronic inflammatory disorders from allergies to asthma to arthritis. *Medicago* has also been used in foods, beverages, medicinal drinks, and nutrient blends because of its high content of many important nutrients.

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