



HAWTHORN

Also Known As:

Aubepine, Aubépine, Aubépine Blanche, Aubépine Épineuse, Bianco Spino, Bois de Mai, Cenellier, Chinese Hawthorn, Crataegi Flos, Crataegi Folium, Crataegi Folium Cum Flore, Crataegi Fructus, Crataegus, English Hawthorn, Epine Blanche, Epine de Mai, Espino Blanco, Fructus Crataegi, Haagdorn, Hagedorn, Harthorne, Haw, Hawthorne, Hedgethorn, LI 132, LI132, May, Maybush, Maythorn, Mehlbeebaum, Meidorn, Nan Shanzha, Noble Épine, Shen Zha, Oneseed Hawthorn, Poire d'Oiseaux, Sable Épine, Shanzha, Weissdorn, Whitehorn, WS 1442, WS1442.

Scientific Name:

Crataegus monogyna; *Crataegus laevigata*, synonyms *Crataegus oxyacantha*, *Mespilus laevigata*; *Crataegus cuneata*, synonym *Crataegus kulingensis*; *Crataegus pinnatifida*; *Crataegus rhipidophylla*.
Family: Rosaceae.

People Use This For:

Orally, hawthorn is used for cardiovascular conditions such as congestive heart failure (CHF), coronary heart disease, angina, and arrhythmias. It is also used to increase cardiac output reduced by hypertension or pulmonary disease, to treat both hypotension and hypertension, atherosclerosis, hyperlipidemia, and Buerger's disease. Hawthorn is also used as a sedative, anxiolytic, antispasmodic, astringent, and diuretic. It is also used for amenorrhea, gastrointestinal conditions such as indigestion, enteritis, epigastric distention, diarrhea, and abdominal pain. Hawthorn is also used orally to treat tapeworm infections and acute bacillary dysentery. Topically, hawthorn is used as a poultice for boils, sores, and ulcers. Hawthorn preparations are used as a wash for sores, itching, and frost bite. In manufacturing, hawthorn is used for making candied fruit slices, jam, jelly, and wine.

Safety:

POSSIBLY SAFE ...when used orally and appropriately, short-term. Hawthorn preparations seem to be safe when used for up to 16 weeks. Although hawthorn might be safe for long-term use, current studies have not evaluated safety past 16 weeks (8279, 8280, 8281, 10144, 17203).

PREGNANCY AND LACTATION: Insufficient reliable information available; avoid using.

Effectiveness:

POSSIBLY EFFECTIVE

Angina. In one clinical trial, patients with angina taking chronic beta-adrenergic receptor blockers or ACE inhibitor therapy that took a hawthorn (*Crataegus*

pinnatifida) extract 100 mg orally three times daily for four weeks experienced a significant improvement in angina and electrocardiogram (ECG) findings, and reduced their nitroglycerin intake compared to the placebo group (19242).

Congestive heart failure (CHF). There is contradictory evidence about the effects of hawthorn extract in heart failure patients. Several clinical studies show that taking specific hawthorn leaf and flower extracts (LI 132, Faros 300, Lichtwer Pharma; WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals; or HeartCare, Nature's Way) 240-600 mg/day improves ejection fraction, exercise tolerance, reduces subjective symptoms and decreases the risk of death in patients with New York Heart Association (NYHA) stage II heart failure. In these studies, the maximum effect was usually seen after 6-12 weeks of treatment (8279, 8280, 11449, 19221, 19223, 19225, 19226, 19227, 19228). Another clinical trial shows that hawthorn extract (WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals or HeartCare, Nature's Way) 1800 mg/day combined with diuretic therapy improves exercise tolerance and reduces subjective symptoms in NYHA stage III heart failure. In this study, maximum effect was usually seen after 16 weeks of treatment (8281). In another trial, patients with NYHA II heart failure, cardiac performance and symptoms improved equally regardless whether they were treated with hawthorn (LI 132, Faros), 300 mg three times daily or captopril 12.5 mg three times daily (19230). In another study, a combination of hawthorn and passion flower extracts for 6 weeks improved walking distance, exercise tolerance, and cholesterol levels compared to placebo (19201).

Some other clinical research suggests no benefit and possible harm in patients taking hawthorn. A large-scale clinical trial (SPICE) in patients with NYHA stage II or III heart failure shows that taking a specific hawthorn extract (WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals or HeartCare, Nature's Way) 900 mg daily for 24 months, in combination with conventional treatment, does not significantly decrease hospitalization due to progressive heart failure, non-fatal myocardial infarction, or cardiac death (17203). One clinical trial in patients with NYHA stage II or III heart failure shows that taking a specific hawthorn extract (WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals or HeartCare, Nature's Way) 450 mg twice daily for up to 6 months does not slow the progression of heart failure compared to placebo (19222). In a retrospective analysis of this study, it was shown that heart failure progression was significantly increased in patients taking hawthorn compared to placebo. The rate of death was also increased by 1.7% and heart failure-related hospitalizations increased by 8% in patients treated with hawthorn compared to placebo (16824).

INSUFFICIENT RELIABLE EVIDENCE to RATE

Anxiety. Preliminary clinical research suggests hawthorn, combined with magnesium and California poppy (Sympathyl, not available in the US), might be useful in treating mild to moderate anxiety disorders (12583). Also, hawthorn in combination with black horehound, passion flower, valerian, kola nut, and guarana, improved anxiety in those with adjustment disorder (6250).

Cognitive function. In a preliminary clinical trial, a single dose of 25 drops of a combination product of D-camphor and Crataegus berry extract (Korodin) was superior to placebo in increasing cognitive performance in elderly female patients as measured by visuomotor speed and information processing capacity. The active treatment group showed an improvement in attentional and mental performance. (19240, 91504).

Hypertension. One preliminary clinical trial showed that taking hawthorn standardized extract 1,000-2,500 mg daily for three days does not significantly reduce blood pressure in hypertensive or prehypertensive patients compared to

placebo (19244). However, another study showed that in patients with diabetes and hypertension, taking a specific hawthorn extract (LI 132) 1,200mg daily for 16 weeks significantly decreased diastolic blood pressure compared to placebo; however, it had no effect on systolic blood pressure (19245). More evidence is needed to rate hawthorn for these uses.

Mechanism of Action:

The applicable parts of hawthorn are the leaf, fruit, and flower. The constituents responsible for the pharmacological effects of hawthorn preparations include flavonoids such as vitexin, rutin, quercetin, and hyperoside; and oligomeric proanthocyanidins (OPCs) such as epicatechin and procyanidins. Some hawthorn products are standardized based on their flavonoid (2.2%) and OPC (18.75%) content (12595). Hawthorn preparations act on the myocardium by increasing force of contraction and lengthening the refractory period, increasing coronary blood flow and cardiac output, and reducing oxygen consumption (10144, 11450, 12595). Hawthorn's cardiotropic properties are attributed to increased membrane permeability for calcium (11450), and phosphodiesterase inhibition, which increases intracellular cAMP. Increased cAMP leads to increased coronary blood flow, vasodilation, and positive inotropic effects (11450, 12595). Preliminary research suggests that hawthorn also has antiarrhythmic activity (12595).

Hawthorn also seems to have hypotensive activity, according to preliminary research. It seems to cause peripheral vasodilation and to induce endothelium-dependent arterial relaxation. The proantocyanidin constituents seem to cause this effect (12595).

Preliminary research suggests hawthorn can lower serum cholesterol, low-density lipoprotein (LDL) cholesterol, and triglycerides. It seems to lower accumulation of lipids in the liver and aorta. Hawthorn fruit extract may lower cholesterol by increasing bile acid excretion, reducing cholesterol synthesis by the liver, and enhancing LDL-receptor activity. Hawthorn also seems to have antioxidant activity (12595).

Animal evidence suggests that hawthorn might have hypoglycemic activity in individuals with diabetes (11451).

Adverse Reactions:

Orally, hawthorn is generally well tolerated with vertigo and dizziness being the most common adverse effects (10144). Hawthorn preparations can cause nausea, gastrointestinal complaints, fatigue, sweating, and a rash on hands. Hawthorn can also cause palpitations, headache, dyspnea, nosebleeds, sleeplessness, agitation, and circulatory disturbances (8281, 10144).

Hawthorn is often used for heart failure. However, a specific extract of hawthorn (WS 1442, Crataegutt forte, Wilmer Schwabe Pharmaceuticals or HeartCare, Nature's Way) has been shown to increase death and hospitalizations due to heart failure. A retrospective safety analysis from a clinical trial in patients with New York Heart Association stages II or III heart failure shows that taking 450 mg twice daily taken for up to 6 months increases the risk of death associated with heart failure by 1.7% and hospitalization by 18% (16824). Until more is known, advise patients not to use hawthorn for heart failure.

Interactions with Herbs & Supplements:

HERBS AND SUPPLEMENTS WITH HYPOTENSIVE EFFECTS: Hawthorn might have hypotensive effects (12595). Theoretically, concurrent use of hawthorn with other herbs and supplements that decrease blood pressure might increase the risk of hypotension. Some of these products include andrographis, casein peptides,

cat's claw, coenzyme Q-10, fish oil, L-arginine, lycium, stinging nettle, theanine, others.

Interactions with Drugs:

BETA-BLOCKERS

Interaction Rating = **Moderate** Be cautious with this combination.

Severity = Moderate • Occurrence = Possible • Level of Evidence = D

Some evidence shows that hawthorn might lower blood pressure and heart rate (12595, 19245). Theoretically, using hawthorn with beta-blockers such as atenolol (Tenormin), metoprolol (Lopressor, Toprol XL), nadolol (Corgard), and propranolol (Inderal) might cause additive effects on blood pressure and heart rate.

CALCIUM CHANNEL BLOCKERS

Interaction Rating = **Moderate** Be cautious with this combination.

Severity = Moderate • Occurrence = Possible • Level of Evidence = D

Some evidence shows that hawthorn might lower blood pressure and heart rate (12595, 19245). Theoretically, using hawthorn with calcium channel blockers such as verapamil (Calan, Covera-HS, Verelan), nifedipine (Procardia), and diltiazem (Cardizem, Dilacor, Tiazac) might cause additive coronary vasodilatory and blood pressure lowering effects.

DIGOXIN (Lanoxin)

Interaction Rating = **Moderate** Be cautious with this combination.

Severity = Moderate • Occurrence = Possible • Level of Evidence = D

Hawthorn appears to improve cardiac output. Theoretically, concomitant use with hawthorn might potentiate the effects of digoxin requiring digoxin dose reduction (12595); however, hawthorn does not appear to affect digoxin pharmacokinetics (19249).

NITRATES

Interaction Rating = **Major** Do not take this combination.

Severity = High • Occurrence = Probable • Level of Evidence = D

Some evidence shows that hawthorn might lower blood pressure due vasodilatory effects (12595, 19245). Theoretically, using hawthorn with nitrates such as nitroglycerin (Nitro-Bid, Nitro-Dur, Nitrostat) and isosorbide (Imdur, Isordil, Sorbitrate) might cause additive coronary vasodilatory effects.

PHOSPHODIESTERASE-5 INHIBITORS

Interaction Rating = **Major** Do not take this combination.

Severity = High • Occurrence = Probable • Level of Evidence = D

Hawthorn might inhibit phosphodiesterase-5 (PDE-5) and cause vasodilation (12595). Theoretically, concurrent use of PDE-5 inhibitors and hawthorn might result in additive vasodilation and hypotension. PDE-5 inhibitors include sildenafil (Viagra), tadalafil (Cialis), and vardenafil (Levitra).

Interactions with Foods:

None known.

Interactions with Lab Tests:

CHOLESTEROL: Theoretically, hawthorn might lower blood levels total and low density lipoprotein (LDL) cholesterol and test results (12595).

Interactions with Diseases or Conditions:

HEART FAILURE: Hawthorn is commonly used for treating heart failure. However, a specific extract of hawthorn (WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals or HeartCare, Nature's Way) has been shown to increase death and hospitalization due to heart failure. A retrospective safety analysis, from a clinical trial in patients with New York Heart Association stages II or III heart failure, shows that taking 450 mg twice daily taken for up to 6 months increases the

risk of death associated with heart failure by 1.7% and hospitalization by 18% (16824). Until more is known, advise patients not to use hawthorn for heart failure.

Dosage/Administration:

ORAL: For heart failure, standardized hawthorn leaf with flower extracts (LI 132, Faros 300, Lichtwer Pharma; WS 1442, Crataegutt forte, Dr. Willmar Schwabe Pharmaceuticals or HeartCare, Nature's Way) 160-1800 mg have been used in 2-3 divided doses daily (8279, 8280, 8281, 10144, 11449, 17203). While these doses have been shown to help with some symptoms of heart failure, they may also increase the risk of hospitalization and death related to heart failure (16824).

Editor's Comments:

None.

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www.naturaldatabase.com
mail@naturaldatabase.com
PH (209) 472-2244