



DOSSIER · SUBSTANCE

Hawthorn (Crataegus)

Hawthorn (Crataegus): What 19 human studies show, including 4 randomized controlled trials – ordered by area of use and strength of evidence.

286

STUDIES IN
TOTAL

10

IN HUMANS

4

OF WHICH
CONTROLLED

30

IN ANIMALS

40

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-15

How to Read This Dossier

ESTABLISHED

measured in humans, with a comparison group

PLAUSIBLE

supported by mechanism, animal studies or observation

HYPOTHESIS

a likely connection that still needs to be tested

Hawthorn (Crataegus) at a Glance

A systematic review of placebo-controlled trials found better exercise tolerance and less shortness of breath and fatigue in chronic heart failure ¹. A meta-analysis of placebo-controlled trials in high blood pressure found a lower systolic blood pressure, with no confirmed difference in diastolic blood pressure ².

In people with diabetes and inflammation of the oral mucosa, rinses with diluted hawthorn vinegar improved mucositis and oral health-related quality of life more than green tea ⁶.

A more recent randomized controlled trial in heart failure found no advantage in walking distance and quality of life in addition to standard therapy, but more adverse events than with placebo ⁷.

Several positive findings come from combination preparations, for example with vitamin C or Baikal skullcap, and do not apply to hawthorn alone ³⁸⁹.

We evaluated 19 human studies on Hawthorn (Crataegus), including 4 randomised controlled trials and 5 meta-analyses or systematic reviews; the controlled studies include 283 participants in total. As of 11 October 2026.

1. What Is Hawthorn (Crataegus)? Occurrence, Origin and Forms

Hawthorn (Crataegus) is a genus of shrubs and small trees in the rose family (Rosaceae). The species used medicinally in Europe include common hawthorn (Crataegus monogyna) and midland hawthorn (Crataegus laevigata). Its leaves, flowers and fruits have traditionally been used for cardiovascular complaints.

Hawthorn grows in Europe, parts of Asia and North America along woodland edges, in hedgerows and thickets. Many species are also planted as ornamentals and hedging plants.

For use, leaves with flowers are collected at flowering time and fruits in autumn, then dried and processed into extracts, usually dry extracts made with water-alcohol mixtures. Human studies mainly examine standardised dry extracts from leaves with flowers and from fruits.

Forms and Preparations Studied

- Dried leaves with flowers
- Dried fruits
- Dry extract from leaves with flowers
- Dry extract from fruits
- Infusion (tea)
- Liquid extract (tincture)

Not covered on this page:

- Plants containing cardiac glycosides and heart medicines, such as preparations from foxglove (Digitalis purpurea), are separate substances and not hawthorn studies.
- Mixtures of hawthorn with other plants, such as mistletoe (Viscum album) or garlic (Allium sativum), do not count as hawthorn alone.
- Ornamental forms of the genus Crataegus that do not belong to the medicinally used species are not the subject of this page.
- Other thorny shrubs such as blackthorn (Prunus spinosa) are confused with hawthorn but are a different plant.

2. What Does Hawthorn (Crataegus) Do? Results by Area

AREA	RESULT IN CONTROLLED STUDIES	STRENGTH OF EVIDENCE	STUDIES	PARTICIPANTS
Heart failure	mostly no difference	moderate	1 meta-analyses · 1 controlled · 4 other	120
Blood pressure	reviews only	low	1 meta-analyses · 0 controlled · 2 other	0
Quality of life	mostly no difference	unclear	0 meta-analyses · 2 controlled · 1 other	240
Other investigations	mixed	unclear	0 meta-analyses · 1 controlled · 11 other	120

How to read the table: counted are human studies whose results concern the area. “High” means at least one meta-analysis and two controlled studies showing improvement, or at least three controlled studies of which three quarters show improvement, with at least 300 participants in total. “Moderate” means at least two controlled studies showing improvement, as a majority, or one meta-analysis alongside controlled studies. “Low” means one controlled study showing improvement. Where an area has no controlled study, the strength of evidence is at most “low” (result “reviews only” or “observational data only”). Everything else is “unclear”. A study counts as showing improvement when at least half of its outcomes in this area improved. Reviews of combination products do not count as meta-analyses; results that only describe side effects or shares of users do not count as an effect. The same study is counted only once.

3. What the Studies Show in Detail

Hawthorn (Crataegus) and Heart Failure: Human Studies

In chronic heart failure, a systematic review of hawthorn leaf-with-flower dry extract as a monopreparation showed improvements in maximum performance in the exercise test, exercise tolerance, the rate-pressure product as well as symptoms such as shortness of breath and fatigue compared with placebo, mostly in addition to conventional therapy ¹. A more recent randomized controlled trial in addition to standard therapy, by contrast, found no difference in the primary endpoint 6-minute walk distance, only a slightly higher ejection fraction ⁷. The strength of evidence is moderate: the positive findings come from a review of older studies; the more recent single study found no benefit for symptoms and exercise capacity. Only dry extract from leaves with flowers was studied, not from fruits; dose and standardization differ by preparation and are stated in the study cards. Statements on other preparation forms, on longer-term course and on transferability to patients outside the studied NYHA classes remain open.

STUDY	DESIGN · PARTICIPANTS	PREPARATION · DOSE · DURATION · COMPARISON
¹ Pittler et al. 2008	meta-analysis · 855 participants	Hawthorn leaf and flower extract monopreparation; vs. Placebo, mostly as adjunct to conventional treatment
⁷ Zick et al. 2009	randomised controlled · 120 participants	Hawthorn extract (leaves with flowers); 450 mg twice daily; 6 months; vs. Placebo added to standard medical therapy
¹⁰ Ford et al. 2012	study	Hawthorn extract as adjunct to standard treatment; vs. Standard treatment alone
¹² Soulakhe et al. 2026	review	Hawthorn (Crataegus spp.), phytochemicals like flavonoids and oligomeric proanthocyanidins; vs. Synthetic cardiotonic
¹⁷ Wang et al. 2013	review	Crataegus extracts (Crataegus oxyacantha); vs. Placebo-controlled trials
¹⁹ 2006	review	Hawthorn (leaves, fruit, flowers)

Hawthorn (Crataegus) and Blood Pressure: Human Studies

A meta-analysis of placebo-controlled trials in high blood pressure found lower systolic blood pressure with hawthorn; for diastolic, the difference was not confirmed ². A randomized controlled trial in heat-exposed shift workers found lower systolic and diastolic values with a hawthorn drink with vitamin C than with salt water; this applies to the mixture, not to hawthorn alone ⁹. The evidence is low: for hawthorn alone, only the meta-analysis is available, and a separate controlled individual study is lacking. Different forms were studied, whose type, plant part and standardization are not uniformly named; it remains open which preparation and which hawthorn species carry the observed effect.

STUDY	DESIGN · PARTICIPANTS	PREPARATION · DOSE · DURATION · COMPARISON
² Szikora et al. 2025	meta-analysis · 428 participants	Hawthorn (Crataegus spp.); 250-1200 mg/day; 10 weeks to 6 months; vs. Placebo
¹² Soulakhe et al. 2026	review	Hawthorn (Crataegus spp.), phytochemicals like flavonoids and oligomeric proanthocyanidins; vs. Synthetic cardiotonic agents
¹⁷ Wang et al. 2013	review	Crataegus extracts (Crataegus oxyacantha); vs. Placebo-controlled trials

Hawthorn (Crataegus) and Quality of Life: Human Studies

In people with diabetes and inflammation of the oral mucosa, oral health-related quality of life improved more with rinses of diluted hawthorn vinegar than with green tea ⁶. A randomized controlled trial in outpatients with chronic heart failure of NYHA class II-III, by contrast, found no difference in quality of life compared with placebo under a dry extract from leaves with flowers in addition to standard therapy ⁷. A randomized controlled crossover trial in subjectively stressed but otherwise healthy adults showed, for a combination preparation of Crataegus laevigata fruit extract with Scutellaria baicalensis root extract, magnesium and chromium, an improvement in mood, anxiety and social satisfaction; this statement applies to the mixture, not to hawthorn alone ⁸. The evidence is unclear: the three controlled trials study different populations, plant parts and preparations, and none is available as a meta-analysis. It remains open whether the findings of the combination preparation are transferable to hawthorn alone.

STUDY	DESIGN · PARTICIPANTS	PREPARATION · DOSE · DURATION · COMPARISON
⁶ Demirağ et al. 2026	randomised controlled · 120 participants	Diluted hawthorn vinegar (1 tbsp/10 cc in 40 cc water); Gargle 1 min, 3 times daily, 15-20 min before meals; 14 days; vs.
⁷ Zick et al. 2009	randomised controlled · 120 participants	Hawthorn extract (leaves with flowers); 450 mg twice daily; 6 months; vs. Placebo added to standard medical therapy
¹⁰ Ford et al. 2012	study	Hawthorn extract as adjunct to standard treatment; vs. Standard treatment alone

Hawthorn (Crataegus): Further Outcomes in Studies

In people with diabetes, inflammation of the oral mucosa decreased more with rinses of diluted hawthorn vinegar than with green tea ⁶. A combination preparation of hawthorn fruits, Baikal skullcap, magnesium and chromium improved attention and working memory in stressed adults in a placebo-controlled study ⁸. The strength of evidence is unclear because the findings come from only a few controlled studies with different preparations, populations and comparison groups. A meta-analysis compared Chinese herbal mixtures containing hawthorn for elevated blood lipids with standard medications; its results apply to the mixtures, not to hawthorn alone ³. For hawthorn as a single preparation in cardiovascular diseases, the data are inconsistent ¹². An overview lists hawthorn among many medicinal plants used against stress in coronary heart disease ¹³. Regarding drug interactions and further applications, the data are unclear ¹⁸¹⁹.

STUDY	DESIGN · PARTICIPANTS	PREPARATION · DOSE · DURATION · COMPARISON
⁴ Woerdenbag et al. 2024	systematic review	Crataegus-containing products, single- and multi-herb preparations
⁵ Posadzki et al. 2013	systematic review	Crataegus spp. (hawthorn), form not specified
⁶ Demirağ et al. 2026	randomised controlled · 120 participants	Diluted hawthorn vinegar (1 tbsp/10 cc in 40 cc water); Gargle 1 min, 3 times daily, 15-20 min before meals; 14 days;
⁷ Zick et al. 2009	randomised controlled · 120 participants	Hawthorn extract (leaves with flowers); 450 mg twice daily; 6 months; vs. Placebo added to standard medical thera
¹¹ Fei et al. 2026	review	Medicine-food homology substances, including hawthorn
¹² Soulakhe et al. 2026	review	Hawthorn (Crataegus spp.), phytochemicals like flavonoids and oligomeric proanthocyanidins; vs. Synthetic cardiot
¹³ Azizkhani et al. 2025	review	Hawthorn (Crataegus spp.) in herbal combinations
¹⁴ Nawrot et al. 2022	review	Hawthorn (Crataegus monogyna and oxyacantha) among plant materials

Further studies in this area: ¹⁵ ¹⁶ ¹⁸ ¹⁹

4. How Is Hawthorn (Crataegus) Dosed? Preparation, Dose and Duration in Studies

The studies mainly used extract from leaves with flowers, as well as diluted hawthorn vinegar as a mouth rinse, fruit extract in a combination preparation, and a hawthorn drink. Leaf-with-flower extracts and fruit extracts are not interchangeable; species, plant part, dose and standardization differ by preparation and are stated in the study cards. Some studies tested hawthorn only as a component of a mixture with other plants or additives.

PREPARATION OR FORM	DOSE	DURATION	STUDY
Diluted hawthorn vinegar (1 tbsp/10 cc in 40 cc water)	Gargle 1 min, 3 times daily, 15-20 min before meals	14 days	⁶
Hawthorn extract (leaves with flowers)	450 mg twice daily	6 months	⁷
Herbal supplement with S. baicalensis, C. laevigata and magnesium/chromium	two tablets as bolus dose, then 15 days	15 days	⁸
500 mL hawthorn beverage with 278.7 mg flavonoids plus vitamin C tablet	500 mL beverage with 278.7 mg flavonoids + 130 mg vitamin C daily	40 days	⁹

5. Is Hawthorn (Crataegus) Safe? Side Effects in Studies

In a randomized controlled trial in heart failure patients, more adverse events occurred with the leaf-with-flower extract than with placebo, mostly non-cardiac ⁷. Hawthorn can enhance the effect of anticoagulants, digoxin and blood pressure-lowering drugs ¹⁹; a review also mentions a bleeding risk during operations ¹⁵. In the placebo studies of the systematic review, side effects were rare, mild and temporary, such as nausea and dizziness ¹.

STUDY	REPORTED SIDE EFFECTS
¹ Pittler et al. 2008	Infrequent, mild, transient: nausea, dizziness, cardiac and gastrointestinal complaints
² Szikora et al. 2025	Safety assessed, no data in abstract
⁴ Woerdenbag et al. 2024	Gastrointestinal, cardiac, skin, nervous system and general reactions; 12.6% of single-herb reports serious
⁵ Posadzki et al. 2013	Minor adverse effects reported for Crataegus spp.
⁷ Zick et al. 2009	More adverse events in hawthorn group (P = 0.02), mostly non-cardiac
⁸ Dodd et al. 2025	No serious adverse effects reported
¹¹ Fei et al. 2026	mild adverse reactions
¹² Soulakhe et al. 2026	Favorable safety profile
¹³ Azizkhani et al. 2025	low risk reported
¹⁵ Hatfield et al. 2022	Bleeding risk, including surgical bleeding
¹⁶ Kanmanthareddy et al. 2015	Interactions and adverse effects of herbal medications poorly understood
¹⁸ Izzo et al. 2012	minor risk of adverse effects with hawthorn

6. What Remains Open: Limits of the Evidence

- Whether hawthorn alleviates symptoms in addition to today's heart failure therapy is open; the more recent study found no benefit ⁷.
- It is open which preparation and which hawthorn species carry the observed blood pressure effect.
- The transferability of findings on combination preparations to hawthorn alone is unclear.
- Statements on longer-term course and on patients outside the studied NYHA classes are lacking.
- Drug interactions and further uses have hardly been studied.

7. Bottom Line: What Is Established About Hawthorn (Crataegus)

Hawthorn is best studied as a dry extract from leaves with flowers. The evidence is moderate for heart failure, otherwise low or unclear, and relies mainly on review articles.

The data are inconsistent: a systematic review of older placebo studies found better exercise tolerance and fewer symptoms in heart failure ¹. A more recent randomized controlled trial in addition to standard therapy, by contrast, showed no benefit for walking distance and quality of life, but more adverse events than placebo ⁷. Further positive findings concern combination preparations and do not apply to hawthorn alone ⁸⁹. The data on tolerability, interactions and further applications are limited ¹⁸¹⁹.

Frequently Asked Questions

How well has Hawthorn (Crataegus) been studied in humans?

We evaluated 19 human studies on Hawthorn (Crataegus), including 4 randomised controlled trials and 5 meta-analyses or systematic reviews; the controlled studies include 283 participants in total. As of 11 October 2026.

Does Hawthorn (Crataegus) help with heart failure? What the studies show

We evaluated one meta-analysis or systematic review, one controlled study and 4 further studies; the controlled studies include 120 participants in total. Result of the controlled studies: mostly no difference. Strength of evidence under our published rules: moderate. Sources: ¹⁷¹⁰¹²

Does Hawthorn (Crataegus) help with blood pressure? What the studies show

We evaluated one meta-analysis or systematic review and 2 further studies. There are no controlled studies yet, only reviews; the strength of evidence is therefore low at most. Sources: ²¹²¹⁷

Does Hawthorn (Crataegus) help with quality of life? What the studies show

We evaluated 2 controlled studies and one further study; the controlled studies include 240 participants in total. Result of the controlled studies: mostly no difference. Strength of evidence under our published rules: unclear. Sources: ⁶⁷¹⁰

What is hawthorn and which plant parts are used?

Hawthorn (Crataegus) is a genus of shrubs and small trees from the rose family. Medicinally used are mainly the common hawthorn (Crataegus monogyna) and the midland hawthorn (Crataegus laevigata). Leaves with flowers and fruits are used, traditionally for cardiovascular complaints.

Do human studies show an effect in heart failure?

A systematic review of placebo-controlled trials found better exercise tolerance and less shortness of breath and fatigue ¹. A more recent randomized controlled trial in addition to standard therapy, by contrast, found no difference in the 6-minute walking distance ⁷. Only leaf-with-flower extract was studied, not fruit extract.

How does hawthorn affect blood pressure?

A meta-analysis of placebo-controlled trials found a lower systolic blood pressure with hawthorn; for diastolic blood pressure, the difference was not confirmed ². In heat-exposed shift workers, blood pressure fell more with a hawthorn drink with vitamin C than with salt water; this applies to the mixture ⁹. Which preparation and which hawthorn species carry the effect remains open.

Which side effects and interactions have been reported?

In a randomized controlled trial in heart failure patients, more adverse events occurred with the leaf-with-flower extract than with placebo, mostly non-cardiac ⁷. Hawthorn can enhance the effect of anticoagulants, digoxin and blood pressure-lowering drugs ¹⁹; a review also mentions a bleeding risk during operations ¹⁵.

Do the results also apply to hawthorn in combination preparations?

No. Findings on combination preparations, for example with Baikal skullcap, magnesium and chromium or with vitamin C, apply only to the respective combination ⁸⁹. For hawthorn as a single preparation in cardiovascular diseases, the evidence is inconsistent ¹².

Sources

1

Hawthorn extract for treating chronic heart failure
Pittler MH, Guo R, Ernst E · 2008

2

Hawthorn (<i>Crataegus</i> spp.) Clinically Significantly Reduces Blood Pressure in Hypertension: A Meta-Analysis of Randomized Placebo-Controlled Clinical Trials
Szikora Z, Mátyus RQ, Szabó BV, Csúpor D, Tóth B · 2025

3

Efficacy of traditional Chinese medicine containing hawthorn for hyperlipidemia: a systematic review and meta-analysis
Zhou X, Chen C, Gao Z, Qian Z, Miao J · 2024

4

Analysis of Adverse Reactions Associated with the Use of Crataegus-Containing Herbal Products
Woerdenbag HJ, Ursidae M, Ekhart C, Schmidt M, Vitalone A, van Hunsel FPAM · 2024

5

Adverse effects of herbal medicines: an overview of systematic reviews
Posadzki P, Watson LK, Ernst E · 2013

6

The effect of hawthorn vinegar, black mulberry syrup, and green tea on oral mucositis and oral health-related quality of life in individuals with diabetes: a single-blind, randomized controlled trial
Demirağ H, Akeren Z · 2026

7

Hawthorn Extract Randomized Blinded Chronic Heart Failure (HERB CHF) trial
Zick SM, Vautaw BM, Gillespie B, Aaronson KD · 2009

8

Effects of a <i>Scutellaria baicalensis</i>/<i>Crataegus laevigata</i>; magnesium and chromium supplement on stressed individuals: A randomised, double-blind, placebo-controlled, crossover trial
Dodd F, Weishaupt R, Katumba PKM, Elcoate R, Wightman E · 2025

9

Effect of vitamin C and hawthorn beverage formula on blood pressure and oxidative stress in heat-exposed workers: a cluster-randomized controlled trial
Du W, Zhang S, Yang J, Fan H · 2024

10

Development of an economic model to assess the cost-effectiveness of hawthorn extract as an adjunct treatment for heart failure in Australia
Ford E, Adams J, Graves N · 2012

11

Medicine-food homology substances in cardiovascular disease prevention and management: from mechanisms to clinical evidence and future translation
Fei S, Rao Y, Lai J, Zhang B, Ma H, Ma X et al. · 2026

12

Hawthorn (Crataegus Species): Phytochemical Insights and Cardi tonic Mechanisms in Cardiovascular Health- A Comprehensive Review
Soulakhe N, Singhai H, Rathee S, Soni S, Patil UK · 2026

13

Role of Herbal Plants for Treatment of Coronary Artery Disease; A Review : Herbalism for Coronary Artery Disease
Azizkhani L, Jahangiri S, Dehestani SM, Hojati H, Ebrahimi Y · 2025

14

Medicinal Herbs in the Relief of Neurological, Cardiovascular, and Respiratory Symptoms after COVID-19 Infection A Literature Review
Nawrot J, Gornowicz-Porowska J, Budzianowski J, Nowak G, Schroeder G, Kurczewska J · 2022

15

Dietary supplements and bleeding
Hatfield J, Saad S, Housewright C · 2022

16

Alternative medicine in atrial fibrillation treatment-Yoga, acupuncture, biofeedback and more
Kanmanthareddy A, Reddy M, Ponnaganti G, Sanjani HP, Koripalli S, Adabala N et al. · 2015

17

Effect of crataegus usage in cardiovascular disease prevention: an evidence-based approach
Wang J, Xiong X, Feng B · 2013

18

Interactions between herbs and conventional drugs: overview of the clinical data
Izzo AA · 2012

19

Hawthorn
· 2006

International Health Research

Research, put in context. Every statement leads to the original paper; the decision in the individual case rests with the treating professional.
ih-research.com/en/knowledge/hawthorn/ · Last updated 2026-10-15