

# HAWTHORN

(Crataegus Oxyacantha)

An overview of its versatility, effectiveness  
and indications



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### **BACKGROUND AND USES**

*Crataegus oxyacantha*, also commonly known as Hawthorn, is a flowering shrub of the rose family. It has been used for many centuries in Europe, and widely used in North America for the last century as a cardiovascular system tonic, an anti-hypertensive botanical and as an agent to induce a more normal blood lipid profile. This botanical medicine is a classic example of the “Doctrine of Signatures”, which was a system of identifying and organizing plants that indigenous herbalists thought might have healing potential by using the shape of a plant's leaves as a guide to the plant's healing use(s). *Crataegus* has a heart-shaped leaf, and was originally thought to offer healing powers specific to the heart. Time-tested uses have centered on restoring cardiac function, improving cardiovascular function where the heart is weakened in diseases like congestive heart failure, and promoting a more friendly cholesterol profile in those patients who have hyperlipidemia or dyslipidemia.

### **ACTIVE CONSTITUENTS**

The flavonoid content of *Crataegus* is considered to be the primary source of its cardiovascular benefits, including protection of the cardiac tissue and cardiovascular system. The flavonoid components, especially its oligomeric proanthocyanidins (OPCs), contain biologically active components that promote vascular stability. The vibrant colors of the *Crataegus* berries come from the concentration of these OPCs. The berries, leaves, and flowers are shown to have medicinal benefit. *Crataegus* also contains cardioactive amines, quercetin, quercetrin, triterpine saponins, and Vitamin C. Quercetin and Vitamin C also promote cellular and vascular stability.<sup>5</sup>

### **MECHANISM OF ACTION**

The constituents of *Crataegus* provide strong anti-oxidant activity, especially the oligomeric proanthocyanidins (OPCs) constituents. Via its action of reducing oxidative stress, *crataegus* has been shown to have hypolipidemic effects, increase the stability of the heart's blood vessels and vasculature throughout the body, and improve recovery of blood vessels from prior oxidative damage, including improvement of atherosclerotic lesions. Via the action of its flavonoid constituents, including quercetin, *crataegus* improves the stability of the collagen containing components of blood vessels.<sup>5</sup> *Crataegus* prevents build up of lipids in the liver by improving the breakdown of cholesterol to bile acids, improving biliary flow and decreasing the creation of excess cholesterol.<sup>5</sup> All three of these actions of *crataegus* work together to improve hepatic steatosis (aka “fatty liver”). These actions also work synergistically to make less circulating lipids available in the blood stream to potentially become inflamed and form atherosclerotic lesions in vulnerable blood vessels. This medicinal profile for *Crataegus* makes it the botanical of choice for promoting overall improved systemic cardiovascular health.

### **RESEARCH SUMMARY**

#### ***Improved Exercise Tolerance in Patients with Congestive Heart Failure (CHF)***

In this particular study, patients who experience poor tolerance of exercise responded positively to the use of *Crataegus* to improve their cardiac function. Increased exercise tolerance improved patients' sense of well-being, aerobic performance and decreased overall feeling of fatigue.<sup>8</sup>

### **Cardiovascular System**

A study using a rat model showed that when fed an atherogenic diet, the Craetagus extract prevented the formation of atherosclerotic lesions in the aorta of the rats, prevented the increase of lipids in the serum and caused a significant decrease in lipid accumulation in the liver. The extract showed significant restoration of the activity of antioxidant enzymes such as superoxide dismutase, catalase, glutathione peroxidase, and glutathione. This increase in key anti-oxidant enzymes restored the antioxidant status of the rats to almost normal levels. These benefits are of significant importance to patients who need to recover from free radical damage to their vasculature, and to patients who have excess lipid accumulation in the liver (aka "fatty liver").<sup>4</sup> This is a particularly encouraging finding for patients who are obese, or whose medical history indicates their cardiovascular system is vulnerable to oxidative damage.

### **Vasculature**

An experimental stroke model using rats was employed to induce a stroke in the middle cerebral artery. Prevention of more extensive stroke damage was demonstrated in those rats that received Crataegus treatment for 15 days before the stroke was induced. The use of crataegus demonstrated both neuroprotective and immunomodulatory effects. The levels of pro-inflammatory cytokines (IL-1 $\beta$ , TNF- $\alpha$ , IL-6, others) were reduced as compared to the rats that did not receive the Crataegus treatments.<sup>2</sup>

### **Dosage range**

The dosage range recommended in review literature is 160-900mg hawthorn extract per day, in 2-3 divided doses (corresponding to 3.5-19.8mg flavonoids or 30-168.8mg oligomeric procyanidins). Some sources recommend a range of 240-480mg/day for extracts standardized to 18.75% oligomeric procyanidins (OPCs).<sup>5,6</sup>

## **CLINICAL INDICATIONS, PRACTITIONER DOSING, CONTRAINDICATIONS AND TOXICITY**

### **Clinical Indications**<sup>6</sup>

- Cardiomyopathy
- Congestive heart failure (CHF)
- Coronary artery disease (CAD, aka angina)
- Damage to the myocardium
- Functional cardiovascular disorders
- Hyperlipidemia
- Hepatic steatosis (aka "fatty liver")
- Hypertension
- Intolerance to exercise
- Anxiety
- Orthostatic Hypotension

### **Contraindications**

For patients who are already hypotensive, caution may be advised in the use of crataegus as part of their treatment plan – a clinician should carefully review all pharmaceutical medications, both prescription and over-the-counter (OTC) with the patient to assess the potential for the prescribed medications to drop the person's blood pressure too low.

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### **Toxicity**

There are very few reports of toxicity with the use of crataegus.

Literature review reveals no evidence of toxicity of hawthorn extracts when given in recommended doses.<sup>6</sup> After administration for six months of up to 300mg/kg daily (100 x standard human dose), no target organ toxicity was found in cats or dogs. Standard mutagenic and clastogenic (chromosome damaging) tests were negative, as well.<sup>6,7</sup>

In a recent literature review of 5,577 patients with congestive heart failure (CHF), fewer than 3% (166) reported any adverse events. The study was conducted to determine the safety of using mono-preparations of Crataegus in patients with CHF. The most common adverse events reported were: dizziness/vertigo (n = 15), gastrointestinal complaints (n = 24), headache (n = 9), migraine (n = 8) and palpitation (n = 11). There were no reports of drug interactions.<sup>1</sup>

A study for preclinical toxicological assessment using a dog model did not find any toxicity with either the acute or chronic use of a dry extract of Crataegus, suggesting safety of administration in human use.<sup>3</sup>

### **CONCLUSIONS**

The overall botanical medicine benefit profile for Crataegus makes it the botanical of choice for promoting overall improved systemic cardiovascular health.

Crataegus is a safe botanical medicine to use in most clinical applications. It has a long history (many centuries) of use for improving the function of a compromised heart, including in the case of cardiomyopathy, congestive heart failure (CHF), coronary heart disease (angina), and functional cardiovascular disorders.

Crataegus is a strong healing partner for lowering hyperlipidemia and normalizing an unfavorable lipid profile. It also helps correct the underlying causes of hepatic steatosis (aka "fatty liver"). Crataegus helps to treat hypertension and promote a normotensive state in patients.

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### ABOUT THE AUTHOR

Dr. Beverly Yates, Naturopathic Physician, graduated from the National College of Naturopathic Medicine in 1994. She is also a graduate of the Massachusetts Institute of Technology with a B. S. degree in Electrical Engineering.

Dr. Yates served as the lead supervising doctor for the first ever fully accredited Naturopathic and Integrative medical residency in the state of California.

Dr. Yates was a Featured Speaker for the California Naturopathic Doctors Association Integrative Medicine conference on Cardiology, presenting continuing medical education on Women and Cardiovascular Disorders.

Dr. Yates serves as a National Media Representative for the American Association of Naturopathic Physicians, appearing as an expert in natural medicine on TV shows in select metropolitan areas. She is a member of the Medical Advisory Board for Schwabe North America, and is on the Scientific Advisory Board for Gaia Herbs, Inc. and BSP Pharma, Inc. Recently, in response to Dr. Yates' contributions to community health, she provided testimony for the Tri-Caucus of the California legislature concerning the growing impact of obesity and diabetes in communities of color around the state and the country.

Sought after for her ability to provide concise, clear explanations about medical processes and natural medicine, Dr. Yates has appeared on numerous TV broadcast networks including ABC, CBS, CNN, CW, Fox, NBC, and PBS; her radio interviews include NPR, CNN Radio, Sirius International Satellite; and her print interviews include Essence Magazine, Good Housekeeping Magazine and Women's World newspaper. She presents continuing medical education (CME) to physicians and other health professionals all over the country.

Dr. Yates is a nationally recognized author [book: Heart Health for Black Women: A Natural Approach to Healing and Preventing Heart Disease, Marlowe & Co., 2000] and contributing author [medical textbook: Maternal Newborn and Child Nursing: Family Centered Care, Prentice Hall, 2003].

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