Crataegus oxycantha (Hawthorne) Indena photo

Crataegus oxycantha

Description

The berries and flowers of *Crataegus oxycantha*, also known as hawthorne, have been used traditionally as cardiac tonics and diuretics in a variety of functional heart disorders. Recent research shows Crataegus extracts exert a wide range of positive actions on heart function, supporting and validating historical observations.

Active Constituents

The main constituents of Crataegus are flavonoids, triterpene saponins, and a few cardioactive amines; however, the primary cardiovascular protective activity of the plant is generally attributed to its flavonoid content, particularly the oligomeric proanthocyanidins (OPCs). The OPCs are highly concentrated in the leaves, berries and flowers, and are responsible for providing the pigment that colors the berries. These flavonoids seem to work synergistically to enhance the activity of vitamin C and promote capillary stability.

Mechanisms of Action

Because of the high content of flavonoid compounds, particularly the OPCs, Crataegus has significant antioxidant activity.[1] In addition, it increases coronary blood flow,[2] enhancing oxygen flow and utilization by the heart. Crataegus extracts also have a positive inotropic effect on the contraction amplitude of myocytes.[3] Due to the flavonoid content, extracts of this herb exert considerable collagen-stabilizing effects, enhancing integrity of blood vessels.[4]

Crataegus extracts prevented elevation of plasma lipids, including total cholesterol, triglycerides, and LDL- and VLDL-fractions, in rats fed a hyperlipidemic diet.[5] Crataegus up-regulates hepatic LDL-receptors, resulting in greater influx of plasma LDL-cholesterol into the liver. It also prevents the accumulation of cholesterol in the liver by enhancing cholesterol degradation to bile acids, promoting bile flow, and suppressing cholesterol biosynthesis.[6] Additionally, it protects human LDL from oxidation and provides indirect protection via maintaining the concentration of alpha-tocopherol in LDL.[7]

Crataegus exerts a simultaneous cardiotropic and vasodilatory action. Because of these actions, it can be safely and effectively utilized for cardiac conditions for which digitalis is not yet indicated.[8]

Clinical Indications

Crataegus is an effective and low-risk phytotherapeutic for patients with coronary heart disease, atherosclerosis, hypertension, or hypercholesterolemia.

Congestive Heart Failure

Research indicates administration of Crataegus provides subjective and objective benefits in individuals with signs and symptoms of congestive heart failure. Over a period of eight weeks, supplementation with Crataegus resulted in a clear improvement in patients with congestive heart failure stage NYHA-II. Patients reported improvement in subjective symptoms, such as reduced performance, shortness of breath, and ankle edema.[9] Similar studies have shown oral Crataegus supplementation improves blood pressure, heart rate, dyspnea, exercise capacity, and change in heart rate in response to exercise under standardized loading on a bicycle ergometer.[10-12] A placebo-controlled, 16-week study of patients with NYHA class III congestive heart failure also revealed dose-dependent improvements in tolerated bicycle exercise workload.[13]

Hypertension

Crataegus exerts mild blood pressure-lowering activity, which appears to be a result of a number of diverse pharmacological effects. It dilates coronary vessels,[14] inhibits angiotensin converting enzyme,[15] acts as an inotropic agent,[3] and possesses mild diuretic activity.

Drug-Botanical Interactions

The root, leaves, and flowers of Crataegus all contain cardioactive compounds. Crataegus preparations may have a potentiating effect on digitalis, necessitating a reduction in the dosage of digitalis.[16]

Side Effects and Toxicity

Crataegus has been shown to have low toxicity. The German Commission E monograph states that mice and rats have been safely given a standardized extract at dosages up to 3 g/kg body weight.[17]

Dosage

Positive effects from supplementation will usually be observed within the first two weeks. In most instances, as a cardiac tonic, Crataegus is administered for prolonged intervals. Dosage will vary depending on the concentration of the extract. A typical therapeutic dose of an extract, standardized to contain 1.8-percent vitexin-4 rhamnoside, is 100-250 mg three times per day. A standardized extract containing 18-percent procyanidolic oligomers is dosed in the range of 250-500 mg daily.

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