

Herbal Therapy for Cardiovascular Health

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Program Objectives:

- ❏ Understand the theory and practice of herbalism as different from, yet complementary to, standard medical care.
- ❏ Identify the benefits and applications of commonly used herbs in maintaining and improving cardiovascular health.
- ❏ Distinguish between the known and theoretical safety concerns relevant to using herbs and cardiovascular medications.

Scope of Application of Herbs in CV Health:

Activities provided by herbs:

- ❏ cardiotonic
- ❏ cardioactive
- ❏ peripheral vasodilatory
- ❏ circulatory stimulant
- ❏ diuretic
- ❏ anti-thrombotic
- ❏ hypocholesterolemic
- ❏ hypotensive
- ❏ vascular tonic
- ❏ nervine
- ❏ antispasmodic

Scope of Application of Herbs in CV Health:

Conditions herbs can resolve:

- ❏ Mild to moderate hypertension
- ❏ Angina
- ❏ Palpitations
- ❏ Mildly elevated cholesterol/triglycerides

Scope of Application of Herbs in CV Health:

Conditions herbs can help manage:

- ❏ Chronic, non-severe hypertension
- ❏ Atherosclerosis
- ❏ Recuperation after CV attacks
- ❏ Venous insufficiency/varicosities
- ❏ Congestive heart failure

Hawthorn

Crataegus monogyna, *C. oxyacantha*, *C. laevigata*



berry

leaf & flower





Hawthorn

Actions: hypotensive; trophic to heart muscle (ie. increases force of myocardial contraction, reduces myocardial oxygen demand, protects against myocardial damage, improves heart rate variability; improves availability & utilization of energy); dilates coronary artery/increases coronary blood flow; supports venous tone (collagen stabilizer); anti-arrhythmic; anxiolytic; antioxidant; hypocholesterolemic

Pharmacology: flavonoids: oligomeric procyanidins (including catechin & epicatechin); quercetin, rutin, vitexin



Hawthorn

Applications: HTN prevention/BP maintenance/moderately elevated HTN; angina; congestive heart disease due to ischemia or hypertension; cardiac insufficiency; arrhythmias; prevention of arterial degeneration caused by atherosclerosis; stabilization of connective tissue; co-factor for Vitamin C

Possible: reduction of cholesterol

Hawthorn

Dose:

- ❏ Berry solid extract: (1-2 tsp/day)
- ❏ Capsules (leaf/flwr &/or berry): 1 g standardized to 15-20 mg OPCs & 6-7 mg flavonoids BID-TID
- ❏ Extracts (leaf/flwr &/Or berry): as low as 30 drops TID; 2-5ml often recommended (up to 15ml may be necessary)
- ❏ Tea: dried leaf, flower, berry 2-4 g/day as infusion/decoction



Hawthorn

Safety: safe for long-term use; theoretical concern that hawthorn may act synergistically with cardiac glycosides and beta-blockers; dose modification may be necessary; monitor co-administration

Current Evidence:

Pharmacokinetic alterations in digoxin not seen in small trial of co-administration with hawthorn. (Tankanow et al, 2003)

“There has been no report of interactions with conventional cardiovascular medication. Hawthorn exerts hypotensive effects with no herb–drug interactions when taken with modern glycaemic, lipaemic and/or hypotensive drugs for type 2 diabetes.” (Walker et al, 2003)

Hawthorn Research

- ❏ Pittler MH, Guo R, Ernst E. (2008). Hawthorn extract for treating chronic heart failure. *Cochrane Database Syst Rev*. Jan 23;(1):CD005312.
- ❏ Meta-analysis of 14 double-blind randomized clinical trials of **hawthorn extract (leaf and flower)** compared with placebo. Ten trials including **855 patients with chronic heart failure** (New York Heart Association classes I to III) were included. In most of the studies, hawthorn was used as an adjunct to conventional treatment. Reported **adverse events were infrequent**, mild, and transient; they included nausea, dizziness, and cardiac and gastrointestinal complaints.
- ❏ **AUTHORS' CONCLUSIONS:** Results suggest **significant benefit** in symptom control and physiologic outcomes **from hawthorn extract as an adjunctive treatment for chronic heart failure.**

Hawthorn Research

- ❏ Degenring FH, Suter A, Weber M, Saller R. (2003).A randomised double blind placebo controlled clinical trial of a standardized extract of fresh Crataegus berries (Crataegisan) in the treatment of patients with congestive heart failure NYHA II. *Phytomedicine*. 10(5):363-9.
- ❏ A total of 143 patients (72 men, 71 women) were treated with **30 drops TID of ethanolic extract** or placebo for 8 weeks.
- ❏ AUTHORS CONCLUSIONS: NYHA II **patients may expect an improvement in their heart failure condition** under long term therapy with the standardized extract of fresh hawthorn berries.

Hawthorn Research

- ❏ Walker AF, Marakis G, Simpson E, Hope JL, Robinson, PA. (2006). Hypotensive effects of hawthorn for patients with diabetes taking prescription drugs: a randomised controlled trial. *Br J Gen Pract.* Jun;56(527):437-43.
- ❏ There was a **significant group difference in mean diastolic blood pressure reductions** ($P = 0.035$): the hawthorn group showed greater reductions than the placebo group. There was no group difference in systolic blood pressure reduction from baseline. **No herb-drug interaction** was found and minor health complaints were reduced from baseline in both groups.
- ❏ **AUTHOR'S CONCLUSIONS:** This trial demonstrates for the first time a **hypotensive effect of hawthorn in patients with diabetes** who are also taking prescription medications.

Garlic

Allium sativum



Garlic

Actions: hypotensive; reduces platelet aggregation/anti-thrombotic; hypolipidemic; peripheral vasodilator; hypoglycemic; antioxidant; anti-microbial

Pharmacology: alliin (organosulfur compound) + allinase (enzyme) = allicin (active, released when crushed or moistened); flavonoids

Garlic

Applications: elevated cholesterol/triglycerides; hypertension; atherosclerosis; thrombosis; diabetes

Dose:

- ❏ Encapsulated Powder: 600 to 900 mg/day (standardized to yield 6 mg allicin)
- ❏ Aged garlic capsules: similar dose to above
- ❏ Fresh bulb: 1 clove/day prophylactically
- ❏ Steam distilled garlic oil:

Garlic

Safety:

- ❏ safe for long-term use; side effects may include occasional GI disturbances
- ❏ case reports suggest garlic is associated with increased bleeding tendency, so use caution before and after surgery (10 days before, 3 days after) and w/anticoagulants and antithrombotic agents, such as aspirin; watch bleeding time (INR)
- ❏ caution with warfarin and HIV protease inhibitors (i.e. saquinavir); high doses (>5g fresh garlic/day) contraindicated w/warfarin

Garlic Research

- ❏ Stevinson C, Pittler MH, Ernst E. (2000). Garlic for treating hypercholesterolemia. A meta-analysis of randomized clinical trials. *Ann Intern Med.* 33(6):420-9.
- ❏ In the 13 trials included in the meta-analysis, **garlic reduced total cholesterol level from baseline significantly** more than placebo ($P < 0.01$).
- ❏ **AUTHORS' CONCLUSIONS:** The available data suggest that **garlic is superior to placebo** in reducing total cholesterol levels. However, the size of the **effect is modest**, and the robustness of the effect is debatable. The use of garlic for hypercholesterolemia is therefore of questionable value.

Garlic Research

- ❧ Ashraf R, Aamir K, Shaikh AR, Ahmed T. (2005). Effects of garlic on dyslipidemia in patients with type 2 diabetes mellitus. *J Ayub Med Coll Abbottabad*. 17(3):60-4.
- ❧ After 12 weeks the garlic treated (600mg/day tablets) group (n = 33) had a **significant reduction in total cholesterol and increased HDL**.
- ❧ **AUTHORS' CONCLUSION:** This study suggests possible **small short term benefits** of garlic on dyslipidemia in type 2 diabetic patients. **Garlic significantly reduced serum total cholesterol and LDL cholesterol and moderately raised HDL cholesterol as compared to placebo.**

Garlic Research

- ❧ Kojuri J, Vosoughi AR, Akrami M. (2007). Effects of anethum graveolens and garlic on lipid profile in hyperlipidemic patients. *Lipids Health Dis.*6:5.
- ❧ Single-blind, placebo controlled study, including 150 hyperlipidemic patients (50 garlic/50 placebo) given enteric-coated garlic powder tablet (equal to 400 mg garlic, 1 mg allicin) twice daily, anethum tablet (650 mg) twice daily, and placebo tablet. (Dietary interventions also included for all participants.)
- ❧ **AUTHORS' CONCLUSION:** Garlic tablet has **significant favorable effect on cholesterol, LDL-cholesterol, and HDL-cholesterol**. Garlic may play an important role in therapy of hypercholesterolemia.

Motherwort

Leonurus cardiaca





Motherwort

Actions: hypotensive; antispasmodic; nervine relaxant; negative chronotrope

Pharmacology: alkaloids (leonurine); iridoid glycosides (leonuride); bitter glycosides; flavonoids (rutin, quercitin); diterpenes; triterpenes; tannins

Motherwort

Applications: mild hypertension, nervous palpitations, all heart conditions associated w/anxiety w/tendency to nervous stomach and worry; tachycardia; history of stroke; supports strong vascular walls; diaphragmatic spasm associated with breathlessness & palpitations

Possible: some traditional use suggests hypolipidemic effect

Motherwort

Dose:

☞ tincture: 2-4ml BID-TID

☞ tea/capsule: 2-4 g dried herb

Safety: safe for long term use; no contraindications known

Motherwort Research

- ❏ Sun J, Huang SH, Zhu YC, Whiteman M, Wang MJ, Tan BK, Zhu YZ. (2005). Anti-oxidative stress effects of Herba leonuri on ischemic rat hearts. *Life Sci.* 76(26):3043-56.
- ❏ **AUTHORS' CONCLUSIONS:** The plant's free radical-scavenging effects and ROS formation-inhibition may play a key role in protecting the endogenous antioxidant system from oxidative stress in vivo.

Dandelion

Taraxacum officinale





Dandelion Leaf

Actions: diuretic (esp. lowers systolic BP); replaces potassium; digestive/liver tonic

Pharmacology: carotenoids (lutein & violaxanthin); xanthophylls; flavonoids (apigenin, luteolin); potassium

Dandelion Leaf

Applications: water retention/edema, esp. related to CV weakness; congestive heart failure; hypertension

Dose:

- ☞ tea: 3-4 g dried leaf infused for 20 min. TID
- ☞ dry leaf capsules : 3-10 g/day
- ☞ tincture: 5-10 ml TID
- ☞ salad food: eat liberally in spring!!



Dandelion Leaf

Safety: safe for long term use; no documented concerns re: interactions; those w/daisy family allergies *may* need to avoid topical application of dandelion leaf products (rarely seen)

Dandelion Leaf Research

- ❧ Rácz-Kotilla E, Rácz G, Solomon A. (1974). The action of *Taraxacum officinale* extracts on the body weight and diuresis of laboratory animals. *Planta Med.* 26(3):212-7.
- ❧ Dandelion leaf extracts given to rats & mice in dose equal to 2 g/day produced effect comparable to furosemide at 80mg/kg.



Herb-Drug Interactions

HDIs are best identified by clinical discovery, as opposed to through speculation and extrapolation from the activity of isolated constituents or animal models.

Differentiate confirmed information collected from repeated clinical observation and/or controlled human studies from less concrete data derived from other sources (animal, in vitro, pharmacological extrapolation).

Herb-Drug Interactions

Consider the following when you read about a contraindication/interaction:

- ❏ What was the dosage of the herb?
- ❏ What was the dosage of the drug?
- ❏ How long was each substance being taken?
- ❏ Was there a dosage change to either substance prior to the suspected interaction?
- ❏ What other prescription or OTC medications or supplements were being taken at the time of the suspected interaction? Was the dosage of any of these substances changed?
- ❏ Were any new medications or supplements introduced immediately prior to the suspected interaction?
- ❏ Is the preparation used appropriate for the herb in question?

Herb-Drug Interactions

- ❏ Were any new dietary or lifestyle habits introduced just prior to the suspected interaction?
- ❏ What is the individual's medical history (especially regarding liver and kidney health)?
- ❏ Does the individual fall into any special population groups more susceptible to adverse reactions (i.e. children, elderly, immuno-compromised)?

Further, data about the specific herbal product also needs to be gathered:

- ❏ Has the herb undergone testing for authentication of species (i.e. is the herb in the product the same as what's listed on the label)?
- ❏ Has the herb been tested for contaminants (such as heavy metals or chemicals)?



Herb-Drug Interactions

Simply because an HDI is confirmed, contra-indication is not the only responsible option.

Some herb-drug combinations may be administered safely under close clinical supervision. In some instances, as with drugs for hypertension or diabetes, careful monitoring can allow for continued co-administration of an herb and drug.



Herb-Drug Interactions

In the case of an herb that may potentiate or duplicate the effects of a medication, the dose of the drug could be lowered while the patient may continue to receive the benefits of herbal supplementation.

In these cases, the beneficial aspect of HDIs can be seen—lower drug dosing can often prevent side effects.











Resources

- ❏ *Essential Guide to Herbal Safety* by Simon Mills & Kerry Bone
- ❏ *Principles and Practice of Phytotherapy* by Simon Mills & Kerry Bone
- ❏ *Medical Herbalism* by David Hoffman
- ❏ www.christopherhobbs.com/database/