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CARDOVASCULAR SYSTEM

Scope
Apart from their use to provide non-specific support for recuperation and repair, specific phytotherapeutic strategies include the following.

Treatment of:
- mild to moderate hypertension;
- angina;
- palpitations.

Management of:
- chronic, non-severe hypertension;
- atheromatous cardiovascular conditions;
- recuperation after cardiovascular attacks;
- venous insufficiency;
- congestive heart failure.

Because of its use of secondary plant products, particular caution is necessary in applying phytotherapy in cases of:
- warfarin, heparin and other anticoagulant prescription;
- digitalis glycoside prescription.

ORIENTATION

Old and new perspectives on the circulatory system

A phytotherapeutic perspective on the circulatory system has to take two parts. Most of what modern medicine understands of the system arises from preoccupation with disease states such as hypertension, hypercholesterolaemia, atherosclerosis, clotting disturbances and thrombosis and coronary diseases that were barely understood in an earlier era. Nevertheless, as this chapter will show, herbal remedies show considerable promise across many of these modern conditions and their use for this purpose has been considerably modified compared with their traditional indications. Three of the best-selling herbal products in Europe, Ginkgo, garlic and Crataegus (hawthorn), are traditional remedies highly adapted to new and productive ends.

Nevertheless, to understand more effectively the potential of medicinal plants in affecting circulatory functions an appreciation of the earlier traditional perspective will be helpful. It is immediately obvious that before modern instruments, human experience of the circulatory system and the effects of treatments upon it was very different. As shall be seen, the insights developed in these early times usefully inform modern prospects.

The circulatory apparatus of William Harvey provided a mechanistic framework for modern advances that was, however, of little application to everyday practice in his time. The common experience was that there was vital movement within the body, as measured by pulse, heartbeat and breathing, and that there was a red fluid whose presence was clearly essential. It was relatively easy to link this with the main manifestation of moving blood: the heat of the living body and the variations in that heat in health and disease. In short, blood pulsed and warmed and was generally linked with the common speculation that there must be circulation of energies, fluids and nutrients around the body. Circulation was marked by
- pulsation
- heat
- blood and reddened complexion and, when in good shape, by a general vital potency.

The heart was obviously associated with all this but as much as a resonator with the vital pulse as its director. It was the wider pulse itself (reflected in the driving rhythms of early tribal music) that was important in early experience of the circulatory system; it was clearly linked to wider vital events: activity, excitement, emotional stimulation and, in medicine, notably the fever.

Therapeutics in fever focused on dispersing agents to distribute excessive heat and circulation and (as 'diaphoretics') to diffuse the poisons clearly involved through the sweat glands. The detoxifying theme recurred in many traditional concepts of 'blood poisons' as a cause of inflammatory diseases, and the use of 'blood cleansers' or 'blood purifiers', often very vigorously, to treat them.

Also requiring eliminatives (mainly diuretics and laxatives) was oedema, one of the most common indications of poor circulation in the past. As briefly elaborated in Chapter 1, the traditional perspective closely linked circulatory function with elimination.

Traditional views also linked circulation with the assimilation and processing of nutrients. The vital pulse and heat were weakened in debility and exhaustion, conditions associated with coldness and pallor. The main treatments were in effect 'blood tonics', warming nutrients (often since found to be rich in mineral nutrients).

There will be profit in revisiting these perspectives in developing modern strategies for the treatment of circulatory problems using herbal remedies. This is even
more justified when the phenomenon of circulation itself is reviewed.

Circulation as currents
Where there has been speculation about the nature of circulatory system in traditional medicine, it has tended to infer broad currents rather than the route map of William Harvey. The closest to the latter were the meridians of Chinese medicine, although even these were speculative phenomena not associated with anatomical conduits. The phenomenological perspective of tradition turns out, however, to be closer to the reality than the conventional understanding of arteries, veins and capillaries might suggest.

As far as most tissue cells are concerned, blood flow is not through vessels at all. When plasma filters through the capillary walls to bathe the tissues, it does not diffuse freely. In most tissues, cells are embedded in a gelatinous matrix, formed of complexes of hyaluronic acid which is largely impermeable to aqueous fluids. Movement of plasma is thus confined through clefts and cleavages in the matrix. The interstitial matrix thus both maintains tissue integrity and restricts the free flow of the circulation – oedema is the main symptom of breakdown in this important construct.

The effect of the interstitial matrix on circulatory dynamics is profound. As far as tissues are concerned, circulation is not a Harveyian affair at all, it is more a diffusive process marked by local and wider oceanic currents. Factors that affect tissue circulation are thus different from those that preoccupy modern cardiovascular medicine. Atherosclerosis and thrombosis cause serious local circulatory harm, of course, but they impact on general circulation only when very severe. More important for circulatory health in the tissues are such factors as capillary wall integrity, the local responses to local environmental changes of powerful vasoactive agents like the kinins and histamine, venous or lymphatic stasis or congestion with subsequent oedema and toxicity.

Antipathogenic benefits of increased tissue perfusion?
A glance at any pathology text will confirm that the cellular processes of disease are remarkably consistent. Pathological deterioration starts with biochemical lesions, then a variety of stages supervene including intracellular lesions, cell hypertrophy and a range of possible degenerative changes, cellular swelling due to water influx into the cell, fatty change or accumulation, atrophy, necrosis, possibly leading to inflammation, or calcification. Most detectable disease states in the body are classified by one or more of these processes. Atherosclerosis, for example, involves fatty infiltration and then calcification of the tissues in the arterial walls.

Moreover, the very first initiating trauma is even more consistent. The most likely first step in tissue damage is a relative deficiency of oxygenated blood and fluids. Physical injury is the most likely initiating trauma followed by an accumulation of external or endogenous toxic substances. In both the first and last cases poor tissue perfusion is critical. There are a number of ways in which tissue circulation can be interrupted but there is a clear prima facie case for maintaining tissue perfusion as a core disease-preventing strategy.

One of the most fascinating prospects for the revival of traditional herbal and dietary approaches is in the number of ways in which plant constituents, like flavonoids, anthocyanins, sesquiterpenes and pungent principles, appear to act beneficially on local circulatory processes.

It is a consistent theme throughout history that the ‘heating’ remedies were literally life enhancing (see pp.4 and 10). The pungent remedies like cayenne, ginger and raw garlic had reputations that transcended the merely mundane. It is known that they do increase tissue perfusion and blood flow. Everyday subjective experiences of increased body heat after eating spicy food can be confirmed with thermometers. Reference to the ginger monograph (see p.394) reveals a number of studies demonstrating a thermogenic effect, involving such mechanisms as increased catecholamine production and cytokine activity. Supplementing rats’ diet with garlic powder increased rectal temperatures, blood noradrenaline levels and mitochondrial activity in brown adipose tissues, an activity that was inhibited by beta-adrenergic blockers.

The prospects for closer investigation are intriguing. It is most probable that the traditional remedies most often used for their tissue warming benefits will show really exciting properties in the treatment of, or prophylaxis against, a range of degenerative diseases that may include atherosclerosis and other cardiovascular diseases. The fact that most are studied of all medicinal plants and foods.
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Garlic

The chemistry of *Allium sativum* is complex and the multitude of garlic products available in the marketplace reflect this complexity. These types of preparations can be divided into three main groups, to which is added fresh garlic.

1. Carefully dried **garlic powder** which preserves the compound alliin (S-allylcysteine sulphoxide) and the enzyme alliinase. On disintegration of tablets or capsules containing this powder in the digestive tract, alliin comes into contact with alliinase and is converted to allicin. (This mimics the chemical process that occurs when a fresh clove of garlic is crushed). Allicin is unstable and breaks down further into compounds such as diallyl sulphides, ajoene and the vinyl dithiins (the metabolic pathways for allicin in the human body are not fully understood).

2. **Aged garlic extracts** or ‘odourless’ garlic products which are produced by a fermentation process. These preparations contain modified sulphur compounds such as S-allylcysteine.

3. **Steam-distilled preparations of garlic** (garlic oil) which are rich in diallyl sulphides.

Most of the published clinical studies on garlic have used ‘garlic powder’ preparations, although trials on aged garlic extracts, fresh garlic and garlic oil are also in the literature.

Lipid-lowering effects

Many studies have demonstrated the lipid-lowering effects of garlic and the results of two metaanalyses supported the premise that garlic acted as a lipid-lowering agent. The first of these examined five selected clinical trials on various garlic preparations with a total of 410 patients. The authors concluded that the best available evidence suggests that garlic, in an amount approximating one half to one clove per day, decreased total serum cholesterol levels by about 9%. About a year later a second metaanalysis was published by Silagy and Neil. These scientists included 16 clinical trials with a total of 952 patients. Again, a variety of garlic preparations were included in the metaanalysis. They found that garlic lowered cholesterol levels by 12% and that dried garlic powder preparations also lowered serum levels of triglycerides. Since the metaanalysis of Silagy and Neil, two negative clinical trials on garlic powder have been published and one negative trial on garlic oil. On the other hand, there are many new positive studies as well. Only careful consideration given to dose and dosage form in a large clinical trial will resolve this issue.

Antithrombotic

A platelet-inhibiting effect has been described for garlic. In a double-blind, placebo-controlled study on 60 volunteers with elevated cerebrovascular risk factors and increased spontaneous platelet aggregation, it was demonstrated that 800 mg of garlic powder per day over 4 weeks led to a significant reduction in platelet aggregation and circulating platelet aggregates. This inhibition of platelet aggregation by garlic powder was confirmed by another research group. However, the confounding issue of the various dosage forms of garlic was highlighted by a study of an oil extract of garlic, which found no significant effect on platelet aggregation. In contrast, consumption of a fresh clove of garlic daily for a period of 16 weeks reduced serum thromboxane by about 80%. One of the compounds responsible for the antiplatelet effect of garlic powder could be ajoene. This compound inhibits aggregation induced by all known platelet agonists in all species studied and prevents the amplification of platelet responses. Unlike aspirin, it acts by modifying the platelet membrane structure.

A review of published studies found that garlic consistently increased fibrinolytic activity after single or multiple doses. Garlic oil and garlic powder were both active, sometimes after only a single dose. The
average increase in the reviewed studies was 58%. A 1991 controlled study using raw garlic demonstrated a significant increase in clotting time and fibrinolytic activity after 2 months in normal volunteers.

**Adverse effects**

A number of case reports have reflected these effects of garlic on bleeding parameters. A spontaneous spinal epidural haematoma associated with platelet dysfunction from excessive garlic ingestion was reported. A patient taking garlic prior to cosmetic surgery experienced bleeding complications and had a clotting time of 12.5 minutes. After cessation of garlic, her clotting time dropped to 6 minutes and there were no complications during a second procedure.

The value of garlic as a prevention and treatment for cardiovascular diseases will best be determined by controlled clinical trials using cardiovascular morbidity or mortality as endpoints. In the meantime, garlic can be prescribed on the basis that it does favourably influence haemorheological parameters (blood flow characteristics) and some cardiovascular risk factors but perhaps not levels of serum cholesterol. Attention should be paid to the type of garlic preparation used; the strongest published evidence to date is for garlic powder preparations, although other preparations will also be of value. Caution should be exercised when prescribing garlic to patients who are also taking other blood-thinning medications such as aspirin or warfarin and garlic intake should be discontinued 10 days before surgery.

**Plant phenolics and the vasculature**

When Szent-Gyorgy in the 1930s identified the flavonoid constituents of citrus fruits as a necessary co-factor with ascorbic acid in the prevention of scurvy, he opened an investigation which has actually increased in intensity in recent years. Interest in the flavonols such as rutin and its aglycone quercetin has been augmented by a growing fascination with other phenolic molecules, the oligomeric procyanidins and the polyphenolics linked to the tannins, all very common constituents in dietary fruit and vegetables as well as in herbal remedies.

Flavonoids, a group of phenolic constituents found widely in plants, including most fruits and vegetables, have been found to possess a number of anti-inflammatory effects, including, especially for rutin and others from the flavonol subgroup, effects on the microvasculature (see also p.31).

Rutin, quercetin-3-rutoside, is a flavonoid glycoside with quercetin as an aglycone and rhamnose and glucose as sugar moieties. It is very widely distributed in the plant kingdom. It is official in many pharmacopoeias and is widely sold as a health supplement, sometimes in association with vitamin C. In experiments it has been shown to increase survival times of rats fed a thrombogenic diet and in other animals to reduce oedema, reduce cholesterol-induced atheroma and inhibit the carcinogenic action of benzo(a)pyrene.

Like ascorbic acid, it is an oxygen radical scavenger and has been shown to reduce the mutagenicity of dusts and asbestos and some cardiovascular stressors.

Commercial products with a similar structure, hydroxyethylrutosides or oxerutins (containing principally tri-0-(b-hydroxyethyl) rutoside, as well as a mixture of mono-, di- and tetra-0-(b-hydroxyethyl) rutosides), are marketed for the treatment of chronic venous insufficiency. There are a number of reports demonstrating positive effects on capillary permeability on venous insufficiency and venous hypertension. Other researchers have reported an improvement in oxygen perfusion of tissues surrounding varicosed veins.

The development of synthetic rutosides has followed the finding that natural rutin is poorly absorbed. However, rutin is now known to be rapidly metabolized by bacteria in the intestine, via quercetin, to 3,4-dihydroxyphenylacetic acid (3,4-DPA), a small phenolic compound with antioxidative properties. Early doubts about the efficacy of such flavonoid molecules (e.g.) have therefore not been sustained.

**Congestive heart failure**

The original observations by William Withering of the benefits of foxglove in the treatment of dropsy by a country herbalist led to the synthesis of the digitals glycosides, still the basis of the primary drug treatment for congestive heart failure. Given its seriousness and the potency of these plant extractives, it has generally been accepted that crude herbal drugs no longer have a place in the rational treatment of the condition.

Nevertheless, there is a consistent tradition for the use of herbs with cardiac glycosides such as Convallaria majalis (lily of the valley) around the world and pharmacological cases have been made for their use as more broad-spectrum gentler remedies (see p.47). Indeed, the use of crude Digitalis folium was favoured by some doctors in Britain over the synthetic isolate until relatively recently. There is also evidence that a wider
range of plants may have supportive benefits in the condition. *Terminalia arjuna* (500 mg; three times per day) demonstrated substantial benefits in the treatment of refractory congestive heart failure linked to dilated cardiomyopathy in a placebo-controlled double-blind crossover trial.36

The cardioglycoside effect may not even be entirely exogenous. Plasma digoxin-like factors (as defined by crossreactivity with digoxin antibody) and in vitro inhibition of ouabain binding have been detected after consumption of several herbal teas. The herb pleursy root was found with particularly high direct values.37 Such factors may constructively be used to improve the often uncertain record of synthetic digoxin prescription and eventually help develop gentler supportive strategies for the management of the condition.

Nevertheless, until clearer awareness of these dynamics is achieved it is difficult to recommend particular strategies.

**PHYTOTHERAPY FOR CARDIOVASCULAR CONDITIONS**

**Essential hypertension**

In about 90% of cases with hypertension there is no identifiable cause and the term 'essential hypertension' is used. In the remaining cases a cause can be identified and these are known as 'secondary hypertension'. The main cause is kidney disease; other causes include coarctation of the aorta, endocrine diseases and pregnancy. Generally, the treatment for secondary hypertension is the same as for essential hypertension but the cause should also be treated if possible. It is important to ensure that patients presenting with essential hypertension do not have a secondary cause. Many patients with hypertension have coexisting cardiovascular risk factors which should also be treated.

Although the milder stages of essential hypertension should probably not be considered as a disease, subjects with hypertension are more likely than those with normal blood pressure to have a number of cardiovascular diseases. In particular, hypertension is a risk factor for the development of coronary heart disease. As such, it is desirable to treat even mild hypertension.

Treatment should aim for gradual reduction in blood pressure. The kidneys will have become adapted to the previously high levels (indeed, an approach to understanding essential hypertension is that it may be a mechanism to ensure adequate kidney function when this is failing). Sudden reduction could lead to other problems. In this sense natural approaches, if effective, can be doubly suitable.

It is apparent to most practitioners that hypertension is an indication for a broad therapeutic strategy, including dietary and lifestyle advice. Some of the features of this advice are therefore outlined below. It is not advisable to attempt to treat severe (greater than 180/110), malignant or accelerated hypertension with only natural approaches; synthetic prescription drugs can be necessary to avoid serious harm in such cases.

**Treatment**

**Diet and lifestyle**

Although the physiological mechanisms responsible for the lowering of BP as a result of exercise have not been elucidated, strong epidemiological and experimental evidence supports a link between the two.38 Aerobic exercise that uses large muscle groups for 20–60 minutes a day for a minimum of 3 days a week is advisable, although there may have to be a gradual build-up to these levels and all stages should be closely monitored.

Obesity and hypertension are strongly linked. There is a continuous linear relationship between excess body fat, blood pressure and the prevalence of hypertension.39 A cause-and-effect relationship has also been demonstrated. Hence weight loss should always be attempted. The waist:hip ratio has been found to be a more accurate predictor of hypertension than either body weight or body mass index.40

The role of sodium (salt) restriction in treating hypertension has been controversial. However, double-blind studies by MacGregor and co-workers clearly show that even a modest reduction in salt intake leads to a fall in blood pressure; in older patients this is equivalent to results with diuretic therapy.41 An editorial in the British Medical Journal was also supportive of the value of salt intake reduction.42

Randomized, controlled trials indicate a specific BP lowering effect of lactovegetarian diets.39 A non-vegetarian diet rich in fruit and vegetables and low-fat dairy products also significantly reduced BP.43 Although the effects of caffeine on BP are considered to be temporary, many practitioners suggest a reduction in caffeine intake to reduce aggravating factors.

Potassium supplementation or the use of a high-potassium, high-magnesium salt have been shown to reduce BP.40 Increased calcium intake may also be of value45 and 6 g per day of fish oil had a mild lowering effect.46
Relaxation techniques could be valuable, although their acceptance has been hampered by poorly designed and ambiguous studies.

Some self-prescribed non-prescription drugs may cause or exacerbate hypertension. These include ephedrine, pseudoephedrine and other decongestant and weight loss agents.

**Herbs**

Most of the herb treatments for hypertension probably act as peripheral vasodilators. They are all slow to exert their activity, except perhaps for Coleus. Important herbs for this condition include the following.

- **Crataegus (hawthorn)** – as well as reducing high blood pressure this herb has a trophic effect on the heart muscle. This is important because left ventricular heart failure is often caused by prolonged hypertension. The leaves are apparently more potent than the berries for reducing high blood pressure.

- **Allium sativum** (garlic) – as well as confirmed antihypertensive effects (see p.199) this plant also favourably influences other cardiovascular risk factors. Allicin-releasing preparations are most proven in blood pressure management.

- **Coleus forskohlii** – can have a pronounced lowering effect on high blood pressure. Only varieties containing forskolin should be used. Coleus also has pronounced antiplatelet activity, which may be desirable in some cases.

- **Valeriana** (valerian) – whether this herb acts as a peripheral or central vasodilator or if the activity is due to a general calming effect on the nervous system is not known. It is usually prescribed for stressed patients.

- **Olea europaea** (olive leaves) – has been proven to lower high blood pressure in clinical trials provided the dose is sufficiently high.

- **Viburnum opulus** (cramp bark) – this herb is thought to relax smooth muscle and has been used to augment antihypertensive prescriptions as a vasorelaxant.

- **Achillea millefolium** (yarrow) – is used by some herbalists to specifically lower an elevated diastolic blood pressure

- **Taraxacum officinale** (dandelion leaves) – has diuretic activity and high levels of potassium and can be useful especially for the treatment of elevated systolic pressure in the elderly.

Other herbs which are also commonly used to lower high blood pressure include *Tilia* species (lime flowers) and *Viscum album* (mistletoe). The Ayurvedic herb *Rauwolfia* is a powerful treatment for hypertension but is usually limited to prescription only.

**Case history**

A female patient aged 48 sought assistance for palpitations, anxiety, angina and mild hypertension. Her ECG did not reveal the presence of a cardiac arrhythmia and her palpitations were less severe in recent times. On examination her blood pressure was 170/95 despite her use of the prescribed drugs Trandate and Plendil.

After treatment over a few months, the following formula was settled upon.

- **Ginkgo biloba** standardized extract 20 ml
- **Panax notoginseng** 1:2 20 ml
- **Crataegus folia** 1:2 25 ml
- **Corydalis ambigua** 1:2 20 ml
- **Hypericum perforatum** 1:2 25 ml
- **Passiflora incarnata** 1:2 20 ml
- **Salvia miltiorrhiza** 1:2 20 ml
- Total 150 ml

Dose 7.5 ml with water three times a day.

Over the ensuing months her blood pressure was typically 135/85. She had no problems with palpitations and her anxiety and angina had improved.

The rationale for the formula was as follows:

- **Panax notoginseng**, **Crataegus** and **Salvia** for her heart and angina.
- The above herbs and **Ginkgo**, **Corydalis** and **Passiflora** for palpitations.
- **Corydalis**, **Passiflora** and **Hypericum** for anxiety.
- **Crataegus** and the above herbs for anxiety for her hypertension.

**Angina**

Angina pectoris is a manifestation of ischaemia of the heart muscle which is usually caused by diseased coronary arteries or other reduction in coronary blood flow. It is mostly a distressing rather than dangerous symptom but there is an increased risk of heart attack and a small proportion will have fatal or serious attacks soon after diagnosis. It is therefore not a condition to be treated casually. Conventional prescription drugs may be necessary, although these most often work well with herbal treatments. It is theoretically possible to argue that the frequent use of daily aspirin can be replaced by high phenol and...
polyphenolic consumption from fruit and vegetables (see Chapter 2) but without firm evidence it is unwise to interfere with a strategy that has good clinical evidence of efficacy. Reduction in smoking, hypertension, obesity, any high cholesterol or lipidaemia and a measured increase in exercise is strongly advisable if these measures can be introduced without serious perturbation.

**Treatment**

The key herb is Crataegus (hawthorn). Preparations from the leaves and flowers and/or berries may be used. As well as being proven in clinical trials to reduce myocardial oxygen demand (see the hawthorn monograph, p.439), Crataegus is antioxidant, cardioprotective and a coronary artery vasodilator. The clinical trials have shown that Crataegus is safe to combine with conventional drugs.

The Ayurvedic herb Inula racemosa (a close relative of elecampane - *Inula helenium*) has been shown to benefit angina in clinical trials. It is said by some authors to be a 'herbal beta-blocker'. The key Ayurvedic herb for heart conditions is *Terminalia arjuna* and this can also be of value in the treatment of angina.

*Salvia miltiorrhiza* (dan shen) is a Chinese herb which has been clinically studied for angina and other heart conditions. Its benefits include cardioprotective, vasodilator and antiplatelet activities.

Antiplatelet herbs such as *Coleus forskohlii*, *Allium sativum* (garlic), *Zingiber* (ginger) and *Curcuma longa* (turmeric) may have value even if the patient is taking aspirin, because of their differing mechanisms. (They do not appear to decrease prostacyclin production. They also have other properties which may be beneficial; e.g. Coleus is a vasodilator and Curcuma is antioxidant. However, care should be taken to ensure that bleeding time is not excessively prolonged.

Many scientists now concede the benefits of red wine in reducing heart disease. However, increased consumption of alcohol is undesirable for other reasons. Grape seed extract (100 mg/day) can therefore provide a suitable substitute for red wine intake.

*Capsicum spp.* (cayenne) has fibrinolytic activity and was traditionally used to improve myocardial blood supply.

Other vasodilating and relaxing herbs which are prescribed include Tilia species (lime flowers) and *Viburnum opulus* (cramp bark). For angina exacerbated by stress and anxiety, Valeriana and Corydalis or similar calming herbs can be prescribed.

**Hyperlipidaemia**

Hyperlipidaemia may involve hypercholesterolaemia (elevated serum cholesterol) or hypertriglyceridaemia (evaluated serum triglycerides). In adults less than 65 years of age, a cholesterol concentration greater than 6 mmol/l (240 mg/dl) or a triglyceride concentration greater than 2.8 mmol/l (250 mg/dl) clearly indicates hyperlipidaemia. However, in the presence of other independent risk factors for atherosclerosis, levels lower than these may require treatment (a 'desirable' cholesterol level is less than 5.2 mmol/l)

Low high-density lipoprotein (HDL) cholesterol, below 0.9 mmol/l (35 mg/dl), is also a risk factor for atherosclerosis.

While there is no doubt that hyperlipidaemia, especially hypercholesterolaemia, is associated with increased incidence of premature ischaemic heart disease, intervention with drug therapy, especially in some populations, is still controversial, as for example in healthy women and the elderly (where high cholesterol levels may even be protective of health). However, the benefits of treating raised cholesterol in most patients with coronary heart disease after a myocardial infarction (secondary prevention) are clear.

**Treatment**

**Diet and lifestyle**

Dietary treatment should be the first-line therapy for hyperlipidaemia, especially in those population groups where the benefit of more aggressive therapy has not been established. All common and most of the rarer types of hyperlipidaemia respond to diet therapy. Saturated fat intake should be reduced. Fibre, especially soluble fibre from fruit, vegetables, legumes, oats and rice, should be increased. Fish consumption, especially of oily fish, should be increased. There is probably benefit in the use of monounsaturated vegetable oils such as olive oil, and cholesterol intake should be reduced. Alcohol intake should be light and binge drinking avoided.

**Herbs**

Key herbs to consider are *Curcuma* (turmeric), *Commiphora mukul* (guggul), *Allium sativum* (garlic) and *Cynara* (globe artichoke).

These herbs can be supported by saponin-containing herbs which are believed to sequester cholesterol in the digestive tract. Gymnema is rich in saponins and has been found to reduce cholesterol in clinical
trials on diabetics (see Chapter 2); saponins from *Medicago sativa* (alfalfa) have also been shown to lower cholesterol.

Mucilages are a class of polysaccharide related to soluble fibre. Soluble fibre such as guar gum is thought to lower cholesterol by the following mechanism. Bacterial flora in the large bowel metabolize soluble fibre to produce short-chain fatty acids (SCFA). Some of these SCFA are carried by the portal venous system to the liver where they influence hepatic metabolism to decrease cholesterol biosynthesis. Patients can supplement their soluble fibre intake with mucilages such as *Ulmus* (slippery elm), *Althaea* (marshmallow root) and seeds or hulls from *Plantago* species (psyllium, ispaghula).

Green tea consumption has been shown to significantly reduce serum cholesterol and triglycerides and increase HDL.54

**Palpitations**

Palpitations (undue awareness of the beating of the heart) can be a significant source of anxiety to the sufferer. The awareness is most commonly brought about by a benign change in the rhythm or rate of the heart, amplified in the resonant chamber of a tense thoracic cavity. However, sinus tachycardia or less benign arrhythmias such as ventricular or atrial tachycardia, heart block or atrial fibrillation may be responsible. These factors should be excluded in diagnosis.

**Treatment**

**Diet and lifestyle**

A key element in palpitations is likely to be diaphragmatic spasm, unconscious tension of this large muscle and others in the wall of the chest. Palpitations (along with hyperventilation, some nervous dyspepsias and swallowing difficulties) are therefore an important indication for a coordinated programme of breathing exercises, best initiated under instruction. Patients should avoid excessive nicotine and caffeine intake. Intake of chocolate, cheese and synthetic food preservatives should be reduced. Vasodilator drugs and asthma or nasal treatments containing sympathomimetic (e.g. ephedrine) drugs should be reviewed. Excessive intake of the herbs Ephedra, Panax and Paulinia (guarana) and Cola should be avoided. Methods to reduce emotional stress should be advised.

**Herbs**

The combination of benign arrhythmias or ectopic beats with thoracic tension may be treated with *Leonurus cardiaca* (motherwort), Corydalis, Ginkgo, *Salvia miltiorrhiza* (dan shen) and particularly *Crataegus*.

Emotional and mental tensions may be reduced with the above combined with herbs such as Valeriana, Scutellaria (skullcap), *Passiflora*, *Piper methysticum* (kava) and Hypericum (St John’s wort).

The dyspeptic and reflux conditions often associated with this syndrome should be treated with the appropriate upper digestive relaxants (see p.172).

**Varicose veins**

Weakness of the vein wall and poor venous tone can lead to venous valves becoming incompetent. Varicosed veins are the superficial sign of what may be a wider venous insufficiency. Although there are few prospects for cosmetically changing established varicosities, natural treatments stress the need to maintain good venous and connective tissue tone so as to reduce further trouble and improve venous return from the lower body.

**Treatment**

**Diet and lifestyle**

Fruit and vegetable intake should be high to maintain optimum levels of flavonols and other supportive elements. Regular walking and resting or sleeping with the legs elevated is often to be recommended. Elastic stockings should be useful, especially if applied first thing in the morning. Cold water applied to the legs from the knee to the foot can help to stimulate circulation and tone the area.

**Herbs**

*Aesculus hippocastanum* (horsechestnut)55 and *Ruscus* (butcher’s broom), taken internally and also applied topically in a cream, are key aspects of treatment. These herbs are proven to increase venous tone. Aesculus should not be applied to broken skin. *Crataegus* and *Vitis vinifera* (grape seed extract) will also help maintain venous tone. *Melilotus* (sweet clover) has anti-oedema activity and improves venous return.

Circulatory herbs, especially *Achillea* (yarrow) and Ginkgo, can be very helpful.
Other herbs beneficial on topical application include Symphymy (comfrey), Calendula and Hamamelis (witchhazel).

**Stasis dermatitis and stasis ulceration**

Stasis dermatitis (varicose eczema) develops in the legs as a result of chronic oedema and venous incompetence. It usually begins as a scaling associated with itching over the medial aspect of the ankle and can progress to become stained as a result of extravasation of blood.

Stasis ulceration (varicose ulcer) is a further complication of stasis dermatitis. The ulcers are shallow and can be quite large. They often result from damage such as knocking the leg and can take months or longer to heal. Bacterial infection is present.

**Treatment**

Treatment is essentially as for varicose veins but the following additions or modifications are important to prevent further damage and heal any ulcer.

- Aesculus or Ruscus should not be applied topically. The best topical treatments consist of Calendula and Echinacea as a lotion and Calendula cream applied on the good skin around the edge of the ulcer. Inclusion of Centella (gotu kola) for healing and Echinacea for its immune effects in the oral treatment can be beneficial.

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