

Chapter 6

HERBAL MEDICINE

The term “herb” is derived from the Latin word *herba* meaning “grass”. The name has a range of meanings in English. It may refer to a plant in which the stem does not become woody but the plant dies entirely or at least down to the ground after flowering. It is sometimes used to refer to the leaf of a plant as distinct from its root. Finally, the term has been applied to plants of which the leaves, stems or fruit are used for food, for medicines, or for their scent or flavour. It is in this last sense that we are using the word although herbal medicines may be prepared from any part of a plant, including the roots or rhizomes (subterranean stems). To the medicinal herbalist, a herb is any plant of medicinal value. Many herbs are available in the kitchen and there is no clear line of demarcation between their culinary and clinical uses. For example, spices are herbs that are strongly flavoured or produce powerful odours and are used to enhance the taste of foods¹ on the one hand yet are constituents of various herbal remedies on the other.

Medicines gleaned from plants have been one of the most powerful weapons in the therapeutic armamentarium of non-surgical medical practitioners and their forebears down the ages. Over the centuries, the use of herbal medicines became deeply rooted in tradition and folk-lore, in religion and magic. Accounts of herbal medicines may be found in the ancient texts of the Egyptians, Indians and Chinese as well as in the writings of the Greeks and Romans around the time of Christ. Herbs were prominent in the formularies of the Arabs during the Dark Ages and they have been passed on to us through the Middle Ages. In the nineteenth century, many of these preparations were codified as *materia medica* and today they form the basis of our modern science of pharmacology and of the drug industry.

From plant to patient

Plants often have one or more common names as well as an italicised scientific name. Thus, the garden rose is known technically as *Rosa grandiflora*, the first name representing the genus and the second being the species. The generic name is the group name like a surname or family name while the species name is equivalent to a first name or Christian name and indicates the different members of the group.

There have been numerous instances where modern science has first extracted, then identified, sometimes modified, and mass-produced drugs from plants and there are

¹Max B. This and that: the essential pharmacology of herbs and spices. *Trends in Pharmacological Sciences* 13: 15-20, 1992

undoubtedly many more to come.² We take these drugs as tablets, capsules, powders, suspensions or have soluble preparations injected into us. A few examples will be given to show the wonderful legacy that the plant world has given to medicine.

Curare, a paralyzant for anaesthesia, from Strychnos and other species

Curare is a collective term for various South American arrow poisons. These agents have been used for centuries by Indians along the Amazon and Orococo Rivers for killing wild animals, death resulting from paralysis of the muscles. The technique for preparation of curare was shrouded in mystery and was entrusted only to witch doctors. Early in the nineteenth century, it became apparent that most curares from eastern Amazonia were prepared from species of *Strychnos*. In 1928, Dr Francis de Caux in London used intravenous injections of a crude extract of curare to produce muscle relaxation in seven patients undergoing nitrous oxide anaesthesia. However, he did not publish this work and the idea lapsed because of the difficulty in procuring standardised preparations. This problem was solved by Gill in the United States who prepared curare from *Chondrodendron tomentosum*. In 1942, Harold Griffith and GE Johnson reported the successful use of curare extract in 25 anaesthetised patients in Montreal, Canada. This permitted a revolution in abdominal and thoracic surgery as muscle relaxation enabled the surgeon to have unfettered access to each cavity. Now, various derivatives of tubocurarine, the active agent, are used on tens of thousands of occasions each day.

Digoxin, a heart drug, from Digitalis species

In 1775, William Withering, an English physician and botanist, saw a lady with severe heart failure. In those days this was called dropsy, that is, severe swelling of the legs and shortness of breath due to fluid retention. He thought that her outlook was very poor but found her miraculously better some months later, her improvement being attributed to a herbal tea made from a recipe kept secret by an old Shropshire woman. The medicine comprised 20 or more herbs but Withering was quick to recognise that the foxglove (*Digitalis purpurea*) was likely to be the active component. In order to standardise the dose, he made a powder or infusion prepared from leaves of the plant in its flowering state. He became familiar with the toxic manifestations when given in excessive dosage. After observing its effects in 163 patients over ten years, he wrote a book entitled "An account of the foxglove, and some of its medicinal uses". Today, digitalis is generally prescribed as digoxin, the active constituent of the leaves of *Digitalis lanata*.

²Phillipson JD. Natural products as drugs. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 88, supplement 1: 17-19, 1994

Morphine, a pain-killer, from Papaver somniferum

The psychological effects of opium were known to the ancient Sumerians in the Middle East. The word “opium” is derived from the Greek word for juice, the drug being obtained from the milky exudate of the unripe seeds of the poppy, *Papaver somniferum*. Arabian traders introduced opium to the Orient where it was employed mostly for the control of diarrhoeal illnesses. The use of opium was re-popularised in Europe in the sixteenth century by Paracelsus. In 1680, the English physician, Thomas Sydenham, extolled it thus: “Among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium”. Opium contains more than 20 distinct chemicals called alkaloids. In 1805, Friedrich Sertürner described one of these which he named morphine after Morpheus, the god of dreams. Morphine remains one of the most powerful agents that we have for controlling pain.

Penicillin, an antibiotic, from Penicillium species

If one thinks of a fungus as a plant, then perhaps the most important of all plant-derived drugs are the penicillins and other antibiotics. In 1928, Alexander Fleming in London noticed that colonies of bacteria called staphylococci did not grow around a mould called *Penicillium notatum* that had contaminated a culture plate. He made a broth from this fungus and called it penicillin. In 1940 Howard Florey in Oxford injected this material into mice infected with staphylococci and they survived an otherwise fatal infection. Later that year his wife, Ethel, treated a British policeman with an infection of the heart valves due to the same organism. This was wartime so commercial production of penicillin from *Penicillium notatum* then later from *P. chrysogenum* was largely transferred to the United States. Since that time, many other antibiotics have been made from various fungi, saving countless millions of lives.

Quinine, an antimalarial, from Cinchona species

Cinchona bark has been familiar to South American Indians for generations as being useful in relieving fevers. In 1630, the Spanish governor of Loxa in modern Peru was cured of fever by drinking an infusion of the bark. Three years later, Antonio de la Calancha, an Augustinian monk, published a book extolling its virtues. Subsequently, it was said (incorrectly) to be introduced to Europe by the Countess of Chinchón. It was popularised by the Jesuits and in 1649 the French Dauphin (later Louis XIV) was cured by this “Jesuit’s bark”. In 1820, two French pharmacists isolated quinine from cinchona bark. The Spanish held a monopoly on the bark until the Dutchman, JC Haskaard,

smuggled some to Java in 1854 and Clements Markham, an Englishman, managed to take some to India in 1860. Quinine became the standard drug for the treatment of malaria and indeed is still used in difficult cases.

Beliefs about herbs

Many lay people believe that plant remedies are naturally superior to synthetic drugs and that such preparations are not harmful when they are used in their natural state. A number of concepts underlie such beliefs.³ First is the idea that herbs exist on the earth as our rightful medicines. This is a view which is hallowed by Biblical references to the medicinal use of herbs. Second is the “Doctrine of Signatures” which states that medicinal plants exhibit signs that indicate their use. For example, heart-shaped leaves are considered to be good for heart disease whereas a plant with red flowers would be good for blood disorders. Such thoughts also form the basis for many common names of herbs such as “heartsease” and “eyebright”. Thirdly, some herbal remedies have been shrouded in mysticism as magic formulae or incantations often accompanied administration of the preparations. Thus, Nicholas Culpeper, the famous seventeenth century English apothecary who in 1653 wrote a book, the “Complete Herbal”, which has become the basis for many modern herbals, relied heavily on astrology to explain the usefulness of his remedies.

Modes of administration

Herbs have been administered in various forms including dried powders, infusions (water-soluble extracts such as a cup of tea made by drawing tea-leaves with hot water), decoctions (liquids in which plant materials have been boiled for a time), elixirs (volatile liquid preparations often containing quantities of alcohol), linctuses (liquid preparations of a syrupy or viscous nature) and concoctions (mixtures of ingredients). These have generally been imbibed but some preparations have been applied to the skin. Two variations of these themes are of special note.

Aromatherapy is the massage of the body or face using essential oils extracted from plants. Essences are aromatic (volatile) oils that have their own characteristic odour. Examples are lavender oil and eucalyptus oil, frankincense and myrrh, and essence of lemon or orange. As well as being applied to the skin, many of the essential oils can also be taken orally. This is discussed further in the chapter on miscellaneous therapies.

³Dubick MA. Historical perspectives on the use of herbal preparations to promote health. *Journal of Nutrition* 116: 1348-1354, 1986

Bach remedies were devised by Edward Bach (1880-1936), a London bacteriologist. He claimed that warmed dew absorbed the properties of the plant from which it was collected and that the same phenomenon occurred if flowers were soaked in a bowl of water. These remedies have been promoted particularly for the treatment of psychiatric disorders.

Indications for use

The indications for the use of herbs are ill-defined and vague. For example, according to one textbook of naturopathy, headaches can be cured with cardamon, chamomile, lavender, lemon, marjoram, pennyroyal, peppermint, rose or rosemary. Conversely, camphor can be used to treat acne, bronchitis, burns, colds, colic, constipation, depression, diarrhoea, fever, flatulence, nervous tension, rheumatism, shock, oily skin and toothache. Notice that it is said to relieve both constipation and diarrhoea! Furthermore, camphor is claimed to be both a sedative and stimulant. This is no problem to the herbalist who claims that these preparations restore “balance”. Without any evidence being provided for such affirmations, the charitable view is that this is just wishful thinking. Perhaps more accurate is the opinion that these contradictory assertions are unjustified nonsense to the point of charlatanism.

Toxicity and effectiveness

Naturally, the use of herbal preparations would not have persisted throughout the ages if they did not induce some sort of response. All drugs, whether medications prescribed by your doctor and provided by your pharmacist, or herbal preparations from whatever source, are potentially poisonous. Even water if you drink too much is dangerous - it causes a condition called water intoxication. Similarly, the quantities of spices used in cooking do not present a serious hazard but many components of spices are toxic if taken in large amounts. Whether or not a drug can be used therapeutically depends upon the margin between toxicity and effectiveness. This principle was well understood by William Withering who recognised that over-dosage with the foxglove produced nausea, vomiting, diarrhoea, a slow pulse and green or yellow vision whereas smaller doses relieved fluid retention without causing these troublesome side-effects. The first requirement for any therapeutic drug is that it has a beneficial effect; this is called efficacy. However, it does not matter how effective an agent is if it has intolerable side-effects.

Most developed countries have very strict rules for drugs that require documentation by pharmaceutical manufacturers of solid evidence of their products' efficacy. Moreover, the side-effects must be well-defined and the purity and potency of their preparations

must be demonstrated. For example, in the United States of America, this function is the responsibility of the Food and Drug Administration while in Australia the equivalent body is the Therapeutic Goods Authority.

In contrast to these ethical drugs, regulation of herbal products is either minimal or completely lacking. The latest and worst example of such hypocrisy and perpetration has been provided by the United States Food and Drug Administration. In February 2000 it relaxed the guidelines for the sale of herbal supplements. Manufacturers of herbs, vitamins and dietary supplements can now market their products for conditions such as morning sickness, hot flushes and memory loss without proving that they are safe or effective. Manufacturers can't claim cures for diseases but they can for symptoms! Why did they do it? They appear to have given in to big business. The US Public Citizen's Health Research Group in Washington was both angered with a spokesman saying "This is a snake-oil exemption - it is a complete cave-in to industry".⁴

This lack of regulation has two consequences. Firstly, a herbal preparation may be completely useless either because it is intrinsically inactive or there was inadequate quality control in its preparation. Secondly, a person who takes a herbal preparation may be poisoned. There are several reasons why this may occur.⁵ The plant may be mis-identified or the toxicity of a correctly identified plant may be unknown or ignored. To add to the confusion, one particular plant may have a number of common names. Conversely, the same common name may be applied to a number of different plants, each with its own scientific name. Furthermore, there may be wide variations in the levels of active constituents in plants according to its variety, the portion of the plant used, geographical location, soil conditions and the time of the year. Concentrations of the active components may be altered by the production process and the length of time and conditions under which the preparation is stored. In some instances, herbal preparations are adulterated, that is, contaminated with other chemicals, intentionally or otherwise. There is no doubt that the longer the period over which a herbal preparation is consumed or the more the amount that is ingested on each occasion, the greater is the likelihood of severe toxic disease.

Finally, many herbal preparations are mixtures of herbs. The more constituents that there are in a preparation, the greater is the likelihood that one of the components will be toxic.

⁴Gottlieb S. US relaxes its guidelines on herbal supplements. *British Medical Journal* 320: 207, 2000

⁵Huxtable RJ. The harmful potential of herbal and other plant products. *Drug Safety* 5 (supplement 1): 126-136, 1990

Table 1. Constituents of herbal medicines available in a local Australian pharmacy.

Common name	Scientific name	Portion	Original location
alfalfa (lucerne)	<i>Medicago sativa</i>	seeds	Europe
aloe vera	<i>Aloe vera</i>	leaf	Caribbean
bearberry	see uva ursi		
bilberry	<i>Vaccinium myrtillus</i>	fruit	Europe
black cohosh	<i>Cimicifuga racemosa</i>	rhizome, root	N. America
black walnut	<i>Juglans nigra</i>	leaf	
brindleberry	<i>Garcinia camboja</i>	fruit	Asia
buchu	<i>Barosma betulina</i>	leaf	South Africa
burdock	<i>Arctium</i> species	root	Europe, Asia, N. America
celery	<i>Apium graveolens</i>	seed	Europe
chamomile	<i>Anthemis nobilis</i> <i>Matricaria</i> species	flower	Europe Europe
cinnamon	<i>Cinnamomum</i> <i>zeylanicum</i>	bark	Sri Lanka
cramp bark	<i>Viburnum opulus</i>	bark	USA
cranberry	<i>Vaccinium oxycoccus</i>	berry	USA
dandelion	<i>Taraxacum officinale</i>	root, leaf	Europe
devil's claw	<i>Harpagophytum</i> <i>procumbens</i>	tuber	
dong quai	<i>Angelica polymorpha</i> <i>Angelica sinensis</i>	root	Asia
echinacea	<i>Echinacea purpurea</i>	rhizome, root	
eucalyptus oil	<i>Eucalyptus</i> species	leaf	Australia
euphorbia	<i>Euphorbia hirta</i>	whole plant	India
evening primrose oil	<i>Oenothera biennas</i>	seed	Europe
eyebright	<i>Euphrasia officinalis</i>		Europe
fennel	<i>Foeniculum vulgare</i>	fruit	Europe
fenugreek	<i>Trigonella foenum-</i>	seed	Middle East, India

Common name	Scientific name	Portion	Original location
	<i>graecum</i>		
feverfew	<i>Chrysanthemum parthenium</i>	flower	Europe
gamboge	see brindleberry		
garlic	<i>Allium sativum</i>	bulb	Europe
ginger	<i>Zingiber officinale</i>	rhizome	Jamaica
gingko	<i>Gingko biloba</i>	leaf	Asia
ginseng	<i>Panax ginseng</i>	root	Asia
golden seal	<i>Hydrastis canadensis</i>	root, rhizome	Canada
gotu kola	<i>Cola</i> species	nuts	Africa
guar gum	<i>Cyamopsis tetragonolobus</i>	fibre	
hops	<i>Humulus lupulus</i>	strobile	Europe
horseradish	<i>Cochlearia armoracia</i>	root	Europe
juniper	<i>Juniper communis</i>	berry	Europe, Asia, USA
karaya gum	<i>Sterculia urens</i>	bark gum	India
kelp		seaweed	oceans
kola extract	<i>Cola nitida</i>	nut	Africa
liquorice	<i>Glycyrrhiza glabra</i>	root	Europe
marshmallow	<i>Althaea officinalis</i>	root	Europe
menthol	see peppermint oil		
nettle	<i>Urtica dioica</i>		Europe
papaya	<i>Carica papaya</i>	leaf, fruit	S. America
parsley-piert	<i>Alchemilla arvensis</i>		Europe
passion flower	<i>Passiflora incarnata</i>	flower	Europe
pau d' arco	see taheebo		
peppermint oil	<i>Mentha piperita</i> <i>Mentha arvensis</i>	flower, tops	Europe Asia
prune	<i>Prunus domestica</i>	fruit	Europe
psyllium	<i>Plantago psyllium</i>	seed	Europe

Common name	Scientific name	Portion	Original location
rosehips	<i>Rosa</i> species		
sarsparilla	<i>Smilax</i> species	root, leaf	Central America
senna	<i>Cassia augustifolia</i> <i>Cassia acutifolia</i>	leaf	India Egypt
siberian ginseng	<i>Eleutherococcus</i> <i>senticosuis</i>	root	Asia
skullcap	<i>Scutellaria lateriflora</i>	tops	USA
slippery elm	<i>Ulmus fulva</i>	bark	USA
taheebo	<i>Tabebuia</i> <i>avellanedae</i>	bark	C. America
thyme	<i>Thymus vulgaris</i>	flowering top	Europe
uva ursi	<i>Arctostaphylos uva-</i> <i>ursi</i>	leaf	northern hemisphere
valerian	<i>Valeriana officinalis</i>	root, rhizome	Europe
vegetal silica	<i>Equisetum</i> species		Europe
vitex	<i>Vitex agnus-castus</i>	fruit	
willow bark	<i>Salix alba</i>	bark	Europe

Availability of herbs

People generally obtain herbs from one of two sources. Some people make their own, especially if they live in rural areas of developing countries, but not exclusively so. Others buy them from their local pharmacy or health food shop. Manufacturers of herbal medicines usually market them in one of two ways. Firstly, they may label their products with the name of the herb concerned, such as “Valerian”, “Feverfew” or “Gingko”. Secondly, a number of herbs are mixed together, often with vitamins, minerals or amino acids, and given a label to indicate its purported use, such as “Allergy”, “Arthritis”, “Calm” or “Cold and Flu”. The herbs that may be bought in one form or another from a local pharmacy are shown in Table 1. This list is, of course, by no means exhaustive.

From time to time there have been calls to regulate the use of herbal remedies because of either adverse reactions or the fraudulence that may be associated with unsubstantiated claims or false labelling. However, such suggestions have always been met by intense opposition from a wide variety of community groups. Some are vested interests that will lose financially from regulation but others are consumer groups that believe that individuals

Table 2. Herbs listed under the Therapeutic Goods Act in Australia, 1990.

Scientific name	Common name
<i>Abrus precatorius</i>	jequirity
<i>Acorus calamus</i>	sweet flag, blue flag
<i>Argyreia nervosa</i>	morning glory
<i>Aristolochia</i> species	snakeroot, birthwort
<i>Amanita muscaria</i>	toadstool
<i>Anadenanthera peregrina</i>	
<i>Anasteriopsis caapi</i>	banisteria
<i>Brachyglottis</i> species	
<i>Cannabis</i> species	marijuana
<i>Catha edulis</i>	khat
<i>Conocybe</i> species	
<i>Crotolaria</i> species	
<i>Cynoglossum officinale</i>	hound's tongue
<i>Ethium vulgare</i>	coca
<i>Gymnopius</i> species	
<i>Haemadictyon</i> species	
<i>Heliotropium</i> species	heliotrope
<i>Ipomoea</i> species	
<i>Lithospermum</i> species	
<i>Lophophora</i> species	
<i>Opuntia cylindrica</i>	San Pedro cactus
<i>Papaver</i> species	poppy
<i>Peganum harmala</i>	wild rue
<i>Petasites</i> species	butterbur
<i>Phytolacca</i> species	pokeweed
<i>Piptadenia</i> species	cohoba
<i>Psylocybe</i> species	
<i>Pteridium aquilinum</i>	bracken fern
<i>Rivea corymbosa</i>	
<i>Sassafras albidum</i>	sassafrass
<i>Senecio</i> species	liferoot
<i>Solanum dulcamara</i>	bittersweet
<i>Sophora secundiflora</i>	mescai bean
<i>Stropharia cubensis</i>	
<i>Strychnos</i> species	
<i>Symphytum</i> species	comfrey
<i>Tussilago farfar</i>	

Table 3. Herbs on the poison schedule in Australia.

<u>Toxic ingredient</u>	<u>Scientific name</u>	<u>Common name</u>
aconite	<i>Aconitum napellus</i>	monkshood, wolfbane
belladonna	<i>Atropa belladonna</i>	deadly nightshade
coniine	<i>Conium maculatum</i>	poison hemlock
croton oil	<i>Croton tiglium</i>	euphorbid
nux vomica	<i>Strychnos nux-vomica</i>	
savin oil	<i>Juniperus sabina</i>	cypress
stramonium	<i>Datura stramonium</i>	thorn apple
tansy oil	<i>Tanacetum</i>	
veratrum	<i>Veratrum album</i>	hellebore

have a right to ingest herbs if they so wish, just as they are at liberty to smoke cigarettes.⁶

In Australia, certain herbs are listed in the Therapeutics Goods Act 1990 as "Registered Goods" (Table 2). This means that they must be evaluated for both toxicity and efficacy unless dispensed for a particular therapeutic purpose; in these circumstances, the herbalist is not required to label or record the supply of those medicines. Other herbs known to be very toxic are listed in the Poisons Schedule and their use is proscribed (Table 3).⁷ Nevertheless, people may unwittingly consume such herbs gathered from gardens or the countryside or may even import them illegally into Australia.

In Britain, the Medicines Control Agency has a system for licensing over-the-counter herbal remedies but this is not compulsory and potentially toxic products continue to be widely available.⁸ In the United States, the Food and Drug Administration is only beginning to face the issue of how to come to terms with herbal medicines.⁹ The variety of herbs is enormous. It is not possible to encompass them in any depth in these few pages. In the section that follows, toxic reactions that have been described in the recent medical literature for a number of herbs are recounted, and the slim evidence in favour of the use of several herbs is reviewed. Most of the problems have followed ingestion of herbs or their extracts. However, any plant can cause contact dermatitis following recurrent exposure of susceptible individuals. People who work in factories which prepare herbs may develop rhinitis or asthma. Some plants such as celery¹⁰ can predispose to

⁶Moulds RFW, McNeil JJ. Herbal preparations - to regulate or not to regulate? *Medical Journal of Australia* 149: 572-574, 1988

⁷Gorey JD, Wahlqvist ML, Boyce NW. Adverse reaction to a Chinese herbal remedy. *Medical Journal of Australia* 157: 484-486, 1992

⁸Atherton DJ. Towards the safer use of traditional remedies. *British Medical Journal* 308: 673-674, 1994

⁹Marwick C. Growing use of medicinal botanicals forces assessment by drug regulators. *Journal of the American Medical Association* 273: 607-609, 1995

¹⁰Finkelstein E, Afek U, Gross E, Aharoni N, Rosenberg L *et al.* An outbreak of phytodermatitis due to celery. *International Journal for Dermatology* 33: 116-118, 1994

photosensitivity, a condition where ordinary sunlight causes very severe sunburn.

Alfalfa (lucerne)

A number of years ago, it was found that alfalfa, also known as lucerne, lowered blood cholesterol levels and appeared to prevent atherosclerosis (hardening of the arteries) in rabbits.

- A 59 year-old medical practitioner volunteered to take 80-160 gm of ground alfalfa seeds daily for six weeks. His blood cholesterol fell by 40% but he became anaemic, his white cell count in the blood fell, and his spleen enlarged. Further tests revealed that he had developed a condition called systemic lupus erythematosus. Fortunately, it resolved when he stopped eating alfalfa.¹¹

Aloe vera

Aloe vera is obtained from leaves of various species of the genus *Aloe*. It is sometimes ingested and at other times is applied to the skin. Aloe vera is said to have antibacterial properties.¹² One of its constituents, allantoin, stimulates the skin cells and so aloe vera has been used to enhance wound healing. However, a controlled study of women with severe abdominal wound breakdown after Caesarean section or gynaecological operations showed that there was a delay in healing in patients who used aloe vera gel; healing took an average of 83 days compared with 53 days.¹³

Bay leaves

The bay laurel (*Laurel nobilis*) is an evergreen shrub whose leaves were used in classical times to make wreaths for crowning the victorious. They are also used in cooking to flavour various dishes. A number of cases have been reported where leaves have stuck in the throat causing difficulty swallowing or, more dangerously, breathing. They have also caused rupture of part of the small intestine called a Meckel's diverticulum and have produced severe pain in the rectum.^{14,15}

¹¹Montanaro A, Bardana EJ. Dietary amino acid-induced systemic lupus erythematosus. *Rheumatic Disease Clinics of North America* 17: 323-324, 1991

¹²Shelton RM. Aloe vera: its chemical and therapeutic properties. *International Journal for Dermatology* 30: 679-683, 1991

¹³Schmidt JN, Greenspoon JS. Aloe vera dermal wound gel is associated with a delay in wound healing. *Obstetrics and Gynecology* 78: 115-117, 1991

¹⁴Panzer PE. The dangers of cooking with bay leaves. *Journal of the American Medical Association*

Burdock

The burdocks *Arctium minus* and *A. lappa* are widespread in the northern hemisphere and have sometimes been cultivated for food.

- A 26 year old woman purchased packaged burdock root from a health food shop and made some tea. Shortly afterwards she developed blurred vision and a dry mouth. Two days later she drank some more of this tea which had been steeping for all this time. The same symptoms recurred but in addition her behaviour became bizarre and she appeared to be hallucinating. When she was seen in the local hospital, her skin was hot and dry, her pupils were dilated and her mouth was dry. She recovered after treatment with a drug called physostigmine.¹⁶

Burdock, like deadly nightshade, contains an alkaloid chemical called atropine. This blocks part of the autonomic (unconscious) nervous system that mediates its effects via a chemical called acetylcholine and affects sweating, the blood vessels and the heart.

Castor oil

Castor oil is made from the castor bean plant, *Ricinus communis*. It loosens the bowels and is fairly safe but may cause dehydration if used in too large a quantity.

Cellasene

Cellasene is a mixture of herbs including ginkgo, sweet clover, sea-weed, grape seed oil and evening primrose oil. It has been marketed all over the world as a miracle cure for "cellulite". ie visible body fat. A small placebo-controlled trial found that it did not reduce body weight and the circumference of the limbs. In fact, the cellulite increased.¹⁷

Chamomile

Chamomile (also spelled camomile) tea is made from the flower-heads of *Matricaria*

250: 164-165, 1983

¹⁵Johns AN. Beware the bay leaf. *British Medical Journal* 281: 1682, 1980

¹⁶Bryson PD, Watanabe AS, Rumack BH, Murphy RC. Burdock root poisoning: case report involving a commercial preparation. *Journal of the American Medical Association* 239: 2157, 1978

¹⁷Lis-Balchin M. Parallel placebo-controlled clinical study of a mixture of herbs sold as a remedy for cellulite. *Phytotherapy Research* 13: 627-629, 1999

chamomilla. Some people are allergic to it.

- A 54 year-old woman drank a cup of chamomile tea. Within 20 minutes she had hives all over her body, her throat was swollen and she had great trouble breathing. She was treated in an emergency department with intravenous adrenaline and antihistamines and she made a good recovery.¹⁸

This could have been a fatal reaction. Although chamomile is said to have anti-allergic properties, these can clearly be overwhelmed by severe allergic reactions.

Chaparral

Chaparral is produced by grinding leaves of the creosote bush *Larrea tridentata* which are then used for tea or in tablets or capsules. It is supposed to be an antioxidant and is claimed to retard ageing and to treat a number of skin conditions. It can cause acute hepatitis.¹⁹

- A 42 year-old man presented to his doctor with jaundice (yellow skin and yellow eyes). He had been taking chaparral capsules three times a day for six weeks. Examination showed that his liver was enlarged and blood tests indicated that it was damaged. No other cause for hepatitis was found and the illness resolved after a few weeks once he had stopped taking chaparral.

Chicory

Martin Symons, a chemist at the University of Leicester in England reported that he lost his appetite and about 9 kg in weight for which no cause could be found. He then realised that for three years he had been drinking a "health food" called "Barleycup" which is rich in dried chicory (*Cichorium intybus*) as a substitute for coffee. When he stopped drinking it, he recovered.²⁰

Chuanwu and Caowu

Plants of the genus *Aconitum* have long been used in Chinese herbal medicine. They are

¹⁸Casterline CL. Allergy to chamomile tea. *Journal of the American Medical Association* 244: 330-31, 1980

¹⁹Clark F, Read DR. Chaparral-induced toxic hepatitis - California and Texas, 1992. *Journal of the American Medical Association* 268: 3275-3276, 1992

²⁰Symons MCR. Strange allergy to chicory. *The Lancet* ii: 1027, 1988

supposed to have anti-inflammatory, pain-killing and heart-stimulating effects, so they have been used in a wide range of conditions. Chuanwu is the root of *A. carmichaeli* and caowu is the root of *A. kusnezoffii*.

- A 30 year old male nurse in Western Australia purchased a Chinese herbal preparation which contained aconite for neck pain. He brewed the herbs in water then drank the tea at 4.00 p.m. Within an hour, he had tingling of the fingers which progressed to numbness of the hands, lips and tongue. He lost his balance, became weak and developed palpitations and nausea. He presented to his local hospital at 6.00 p.m. but suffered a cardiac arrest and died at 9.00 p.m. despite extensive attempts at resuscitation.²¹

There have been a number of other reports of aconitine poisoning, including a series of eight cases at the Prince of Wales Hospital in Hong Kong.²² Aconitine poisons nerves and upsets the beating of the heart. There is no specific therapy.

Chuei-Fong-Ton-Gen-Wan

This is a Chinese herbal medicine which is promoted for the treatment of arthritis. It is said to contain 23 herbs, the principal constituent being *Apis chinensis*. However, any anti-arthritic effect is due to prescription drugs being included such as cortisone-like agents²³, indomethacin and phenylbutazone. The last-named is never used in orthodox medicine any more because of its toxicity and one patient who unwittingly took it in Chuei-Fong-Ton-Geu-Wan died from agranulocytosis (absence of white blood cells).²⁴

Cinnamon

Cinnamon is obtained from the bark of *Cinnamomum zeylanicum*. It can cause asthmatic symptoms, skin rashes and conjunctivitis in people who work in the cinnamon production industry. It is a flavouring agent that is sometimes used in toothpaste and

²¹Kelly SP. Aconite poisoning. *Medical Journal of Australia* 153: 499, 1990

²²Chan TYK, Tomlinson B, Critchley JA. Aconitine poisoning following the ingestion of Chinese herbal medicines: a report of eight cases. *Australian and New Zealand Journal of Medicine* 23:268-271, 1993

²³Forster PJG, Calverley M, Hubball S, McConkey B. Chuei-Fong-Tou-Gen-Wan in rheumatoid arthritis. *British Medical Journal* ii: 308, 1979

²⁴Ries CA, Sahud MA. Agranulocytosis caused by Chinese herbal medicines. Dangers of medications containing aminopyrine and phenylbutazone. *Journal of the American Medical Association* 231: 352, 1975

chewing gum and repeated use may cause white lesions in the mouth.²⁵ A volatile oil can be distilled from the bark and leaves. Children and adolescents in the USA have used this to get “high” by sucking toothpicks or fingers dipped in cinnamon oil. It typically causes a sensation of warmth, facial flushing, and burning in the mouth. There may also be nausea and abdominal pain.²⁶

Comfrey

Herbal teas may be made from leaves of the comfrey (*Symphytum* species), and are touted for all sorts of conditions ranging from gout to inflammation of the gall-bladder. These teas contain chemicals called pyrrolizidine alkaloids which can cause severe liver damage with blood clots and scarring.²⁷

- A 13-year old boy was admitted to hospital in England with a swollen liver and ascites (fluid in the abdominal cavity). He had been given comfrey tea for Crohn’s disease by a naturopath.²⁸

Cranberry juice

For decades it has been suggested that cranberry juice (*Vaccinium macrocarpon*) may be useful in treating urinary tract infections. This question was finally investigated by Jerry Avorn MD and colleagues from Harvard Medical School in Boston, Massachusetts, USA. They conducted a randomised, double-blind, placebo-controlled trial in 153 elderly women living in a rehabilitation centre for the aged. The subjects consumed either 300 ml per day of commercially available cranberry beverage or an indistinguishable placebo drink. Urine samples were taken each month.

They reported their results in a paper²⁹ entitled “Reduction of bacteriuria and pyuria after ingestion of cranberry juice”. There was a 58% reduction in the frequency of urinary tract infections when cranberry was drunk (Figure 1). How this works is still not really

²⁵Miller RL, Gould AR, Bernstein ML. Cinnamon-induced stomatitis venenata; clinical and characteristic histopathologic features. *Oral Surgery Oral Medicine and Oral Pathology* 73:708-716, 1992

²⁶Perry PA, Dean BS, Krenzelok EP. Cinnamon oil abuse by adolescents. *Veterinary and Human Toxicology* 32: 162-164, 1990

²⁷Ridker PM, McDermott WV. Comfrey herb tea and hepatic veno-occlusive disease. *The Lancet* ii: 657-658, 1989

²⁸Weston CFM, Cooper BT, Davies JD, Levine DF. Veno-occlusive disease of the liver secondary to ingestion of comfrey. *British Medical Journal* 295: 183, 1987

²⁹Avorn J, Monane M, Gurwitz JH, Glynn RJ. *Journal of the American Medical Association* 271:751-754, 1994

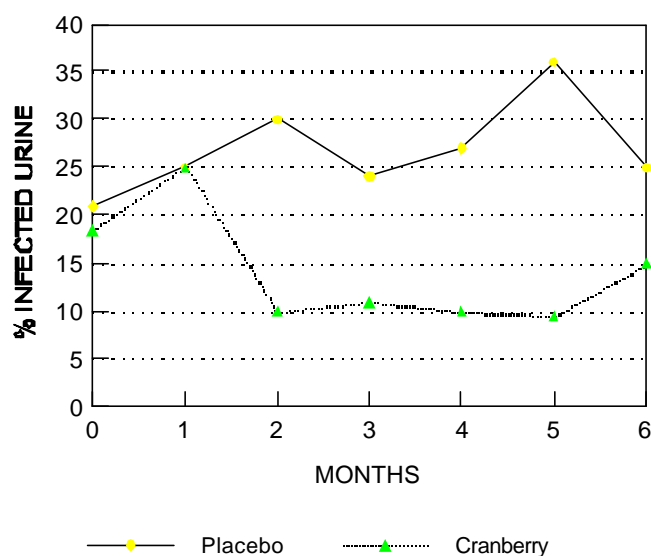


Figure 1. Percentages of women drinking either cranberry juice or placebo whose urine samples showed evidence of infection.

known. It may be because people who consume cranberries pass large quantities of hippuric acid in their urine which may have an antibacterial action. Alternatively, their urine may contain a compound that inhibits the ability of bacteria to stick to the bladder wall.

Devil's claw

This is a herbal product of *Harpagophytum procumbens* marketed in Canada, if not elsewhere, for the relief of arthritis. However, studies in rats have shown that it has no effect on inflammation.³⁰ One of the female editors of a publishing house rejected this manuscript because she said that devil's claw cured her grandmother's dog of arthritis: clearly she had not read chapter 2 on Methods of Research or else she had not understood it!

³⁰Whitehouse LW, Znamirowska M, Pauld CJ. Devil's claw (*Harpagophytum procumbens*): no evidence for anti-inflammatory activity in the treatment of arthritic disease. *Canadian Medical Association Journal* 129: 249-251, 1983

Eucalyptus oil

This colourless or yellow oil is prepared by distilling leaves of various species of *Eucalyptus* or gum trees. It is recommended for oral and inhalational use for upper respiratory symptoms and as an ointment for muscular pain. There have been many reported cases of poisoning with eucalyptus oil, with death occurring with ingestion of as little as 4 ml. However, in reviewing a series of 41 children at the Mater Misericordiae Hospital in Brisbane, Queensland in Australia, Drs Webb and Pitt found no correlation between the volume of eucalyptus oil ingested and the presence of symptoms. The most prominent symptom was vomiting and they concluded that eucalyptus oil may be less toxic than had previously been believed.³¹ On the other hand, Dr James Tibballs from the Royal Children's Hospital in Melbourne, Victoria reviewed 109 children who accidentally took eucalyptus oil and found that a significant depression of consciousness was likely to occur when infants or young children ingested 5 ml or more of 100% oil.³² There are hundreds of species of gum trees and eucalyptus oil contains prussic acid, so perhaps this variability depends upon the species of tree from which the oil is made.

Euphorbia

It has been suggested that extracts of *Euphorbia tirucalli* may be a co-factor for the development of an unusual tumour of the lymph glands called Burkitt's lymphoma.³³ The evidence is pretty soft but until the issue is settled, it might be wise to avoid herbal preparations made from this genus.

Evening primrose oil

Oil extracted from the seeds of the evening primrose (*Oenothera biennis*) contains a chemical called linolenic acid and vitamin E. Linolenic acid is converted in the body into a substance called prostaglandin E which may reduce inflammation. Evening primrose oil seems to be safe; its reported side-effects include nausea, soft stools and headache. Controlled clinical trials of this oil have been carried out for many conditions including atopic dermatitis, rheumatoid arthritis, diabetic neuropathy, multiple sclerosis, various cancers, Raynaud's syndrome, ulcerative colitis, the premenstrual syndrome, breast pain

³¹Webb NJA, Pitt WR. Eucalyptus oil poisoning in childhood: 41 cases in south-east Queensland. *Journal of Paediatrics and Child Health* 29: 368-371, 1993

³²Tibballs J. Clinical effects and management of eucalyptus oil ingestion in infants and young children. *Medical Journal of Australia* 163: 177-180, 1995

³³Aya T, Kinoshi T, Imai S *et al.* Chromosome translocation and c-myc activation by Epstein-Barr virus and *Euphorbia tirucalli* in B lymphocytes. *The Lancet* 337: 1190, 1991

and cysts, schizophrenia and hyperactivity. For many of these conditions, the findings have been negative. In the cases of atopic dermatitis, diabetic neuropathy, premenstrual syndrome and rheumatoid arthritis, the findings have been contradictory but worthy of further investigation.

- *atopic dermatitis*: a meta-analysis (critical statistical review) of nine trials found a positive result but subsequently a double-blind cross-over trial in 123 patients failed to sustain this view.
- *rheumatoid arthritis*: four small trials gave mixed results.
- *premenstrual syndrome*: four trials reported positive results but a subsequent study concluded that any efficacy was purely due to a placebo effect.
- *diabetes mellitus*: two trials have shown a beneficial effect in diabetics who are suffering from nerve damage.

The relevant references may be found by working back from the review by Dr Jos Kleijnen, an epidemiologist at the University of Amsterdam.³⁴ Each capsule contains about 50 mg of gamma-linoleic acid. In various trials the doses taken have varied between 2 and 16 capsules per day. It is thought that it may take several months for the maximum clinical response to develop.

Fenugreek

Seeds of the annual leguminous herb *Trigonella foenu-graecum* are used as a source of protein and as a flavouring agent. Consumption may cause the urine to smell like maple syrup; this is innocuous.³⁵

Feverfew

The leaves of feverfew (*Tanacetum parthenium*), a common ornamental plant, have been used since monastic times for the relief of fever and pain. Clinical studies over the past decade have suggested that feverfew does indeed have medicinal properties. Feverfew contains chemicals called sesquiterpene lactones and these or other substances in feverfew may inhibit inflammation.

Does feverfew prevent migraine?

In a preliminary study of 17 patients, Dr ES Johnson and colleagues from the City of

³⁴Kleijnen J. Evening primrose oil: currently used in many conditions with little justification. *British Medical Journal* 309: 824-825, 1994

³⁵Bartley GB, Hilty MD, Andreson BD, Clairmont AC, Maschke SP. "Maple-syrup" urine odor due to fenugreek ingestion. *New England Journal of Medicine* 305: 467, 1981

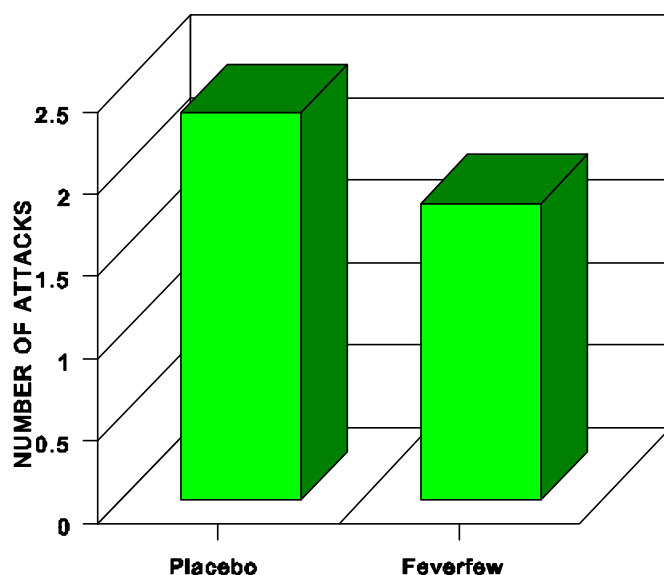


Figure 2. Number of attacks of migraine per month in patients when taking feverfew or a placebo.

London Migraine Clinic found that patients who took freeze-dried feverfew powder each day had less attacks of migraine than did those who were given a placebo powder.³⁶

Subsequently, a larger randomised, double-blind placebo-controlled trial was undertaken by Dr JJ Murphy and colleagues from the department of medicine of University Hospital in Nottingham, England. Seventy-two patients took either one capsule of dried feverfew leaves or matching placebo each day for four months and then were transferred to the reverse treatment. The frequency and severity of attacks were recorded in a diary.

The investigators reported their findings in a paper³⁷ entitled 'Randomised double-blind placebo-controlled trial of feverfew in migraine prevention'. There was a significant 24% reduction in the number of attacks of migraine in those taking feverfew (Figure 2). There was also a trend towards a decrease in the severity of attacks but there was no change in the duration of attacks once they occurred. Nausea and/or vomiting occurred in 49% of patients taking feverfew compared with 56% of those taking placebo. Clearly

³⁶Johnson ES, Kadam NP, Hylands DM, Hylands PJ. Efficacy of feverfew as prophylactic treatment of migraine. *British Medical Journal* 291: 569-573, 1985

³⁷Murphy JJ, Heptinstall S, Mitchell JRA. *The Lancet* ii: 189-192, 1988

feverfew is of value in the prevention of migraine. Attention is now being turned to identifying the active agent(s).

Does feverfew help rheumatoid arthritis?

Since feverfew is reputed by folklore to be effective in rheumatoid arthritis, Dr Martin Patrick and colleagues from Nottingham, England carried out a study in 41 women with rheumatoid arthritis. Feverfew or placebo was given for six weeks and many clinical parameters and blood tests were measured. They reported their findings in an article³⁸ called 'Feverfew in rheumatoid arthritis: a double blind, placebo controlled study'. Unfortunately, no evidence of effectiveness was found. However, feverfew was only given for a short period and it is possible that a longer period of administration may be of value.

Garlic

Garlic (*Allium sativum*) has been used as a remedy for a wide variety of ailments for nearly four millenia. The principal active component is allicin which is formed when a garlic clove is crushed. Three areas which have received special attention in recent years are the effects of garlic on blood cholesterol levels, high blood pressure and whether or not garlic can prevent cancer.

Does garlic lower the serum cholesterol level?

There have been several dozen studies that have addressed this question. High cholesterol levels are associated with atherosclerosis (disease of the blood vessels). Stephen Warshafsky MD and colleagues from the New York Medical College in Valhalla, New York selected five randomised placebo-controlled studies in which most of the subjects had raised cholesterol levels. They concluded that garlic when consumed in an amount of half to one clove per day decreased the total serum cholesterol by about 9%.³⁹

A second analysis was performed by Drs Christopher Silagy and Andrew Neil from the University of Oxford in England. They included 16 trials with data from 952 subjects. They calculated that garlic, whether taken as fresh cloves or as dried powder in a dose of 600-900 mg per day, reduced blood cholesterol levels by 12%. This reduction was evident after one month of therapy and persisted for six months.⁴⁰ More recently, these

³⁸Patrick M, Heptinstall S, Doherty M. *Annals of the Rheumatic Diseases* 48: 547-549, 1989

³⁹Warshafsky S, Kamer RS, Sivak SL. Effect of garlic on total serum cholesterol: a meta-analysis. *Annals of Internal Medicine* 119: 599-605, 1993

⁴⁰Silagy C, Neil A. Garlic as a lipid lowering agent - a meta-analysis. *Journal of the Royal College of Physicians of London* 28: 39-45, 1994

authors have updated this analysis to include newly reported trials and concluded that garlic was less effective than had been thought previously.⁴¹ This view was reinforced by investigators in Germany who conducted a randomised controlled trial and found that cholesterol had no effect of cholesterol or other fats in the blood.⁴²

Does garlic help control high blood pressure?

Whether or not garlic helps control high blood pressure has also been reviewed by Drs Silagy and Neil. They analysed eight randomised, controlled trials.⁴³ Systolic blood pressure (the upper value) was lowered by an average of 8 mm Hg while the diastolic pressure (the lower value) fell by 5 mm Hg in subjects who took garlic. The reviewers concluded that garlic powder appears to be of some clinical use but there are still insufficient data to recommend its routine use as a treatment. *The Lancet* in an editorial was more forthright. It concluded that garlic was for flavour, not to protect the heart⁴⁴.

Does garlic help prevent cancer?

The possible role of garlic in preventing cancer has been reviewed by Dr E Dorant and colleagues from the University of Limburg in The Netherlands.⁴⁵ Epidemiological case-control studies in China and Italy have suggested an inverse relationship between garlic consumption and the risk of cancer of the stomach. The ability of chemical constituents of garlic to prevent cancer development have been studied in the test-tube and in experimental animals. They concluded that the evidence is not conclusive but that further research is warranted. Some research since then has not supported the idea. *Helicobacter pylori* is a bacterium that infects the stomach and predisposes to gastric (stomach) and duodenal ulcers and increases the chances of developing cancer of the stomach. Investigators from Baylor College of Medicine in Houston, Texas, USA showed that garlic had no effect on this infection.⁴⁶

⁴¹Neil HAW, Silagy CA, Lancaster T *et al.* Garlic powder in the treatment of moderate hyperlipidaemia: a controlled trial and meta-analysis. *Journal of the Royal College of Physicians* 30: 329-334, 1996

⁴²Berthold HK, Sudhop T, von Bergmann K. Effect of a garlic oil preparation on serum lipoproteins and cholesterol metabolism: a randomized controlled trial. *Journal of the American Medical Association* 280: 1900-1902, 1998

⁴³Silagy C, Neil A. A meta-analysis of the effect of garlic on blood pressure. *Journal of Hypertension* 12: 463-468, 1994

⁴⁴Beaglehole R. *The Lancet* 348: 1186-1187, 1996

⁴⁵Dorant E, van den Brandt PA, Goldbohm RA, Hermus RJJ, Sturmans F. Garlic and its significance for the prevention of cancer in humans: a critical review. *British Journal of Cancer* 67: 424-429, 1993

⁴⁶Graham DY, Anderson SY, Lang T. Garlic or jalapeno peppers for treatment of *Helicobacter pylori*

Germander

Herbal tea made from germander (*Teucrium chamaedrys*) has caused liver damage.⁴⁷ One patient died after drinking tea made from Tealine tablets which contain *T. chamaedrys*.⁴⁸

Ginger

The root of ginger (*Zingiber officinale*) has long been used as a folk medicine to reduce nausea and vomiting of pregnancy and other gastro-intestinal complaints. Interest has recently been kindled in scientific circles about its effects on motion sickness and the nausea and vomiting associated with anaesthesia.

Does ginger help motion sickness?

In 1982, Drs Mowbrey and Clayson⁴⁹ showed that powdered ginger root had a significantly better effect than placebo or antihistamines (which are commonly used for motion sickness) in experimentally-induced motion sickness in volunteers. This finding was confirmed by some researchers but denied by others.⁵⁰

Dr A Grontved and colleagues from the department of otorhinolaryngology at Svendborg Hospital in Denmark conducted a double-blind randomised placebo-controlled trial of powdered ginger rhizome in seasickness. Eighty naval cadets unaccustomed to sailing in heavy seas were given ginger or placebo. They reported their findings in a paper⁵¹ called "Ginger root against seasickness: a controlled trial on the open sea". Ginger reduced vomiting by 72%; it also reduced nausea and vertigo (dizziness) but not to a statistically significant degree.

infection. *American Journal of Gastroenterology* 94: 1200-1202, 1999

⁴⁷Larrey D, Vial T, Pauwels A *et al.* Hepatitis after germander (*Teucrium chamaedrys*) administration: another instance of herbal hepatotoxicity. *Annals of Internal Medicine* 117: 129-132, 1992

⁴⁸Mostefa-Kara N, Pauwels A, Pines E, Biour M, Levy VG. Fatal hepatitis after herbal tea. *The Lancet* 340: 674, 1992

⁴⁹Mowbrey DS, Clayson DE. Motion sickness, ginger and psychophysics. *The Lancet* i: 665-667, 1982

⁵⁰Stewart JJ, Wood MJ, Wood CD, Mims ME. Effect of ginger on motion sickness susceptibility and gastric function. *Pharmacology* 42: 111-120, 1991

⁵¹Grontved A, Brask T, Kambskard J, Hentzer E. *Acta Otolaryngologica* 105: 45-49, 1988

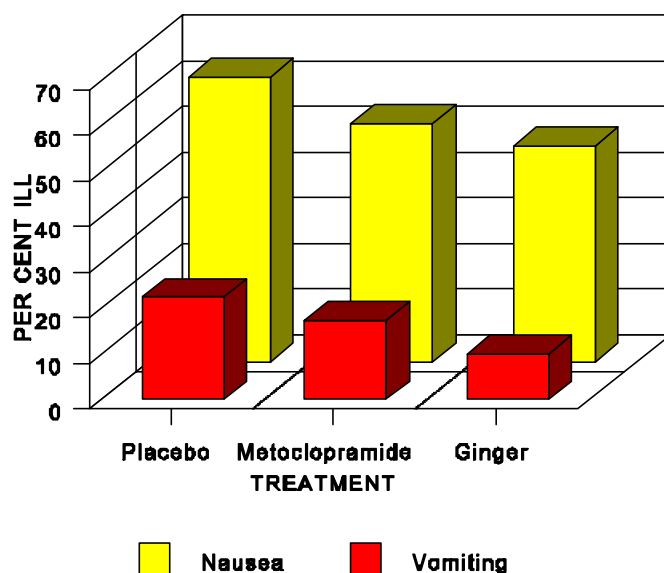


Figure 3. Percentage of women who suffered nausea or vomiting depending upon whether they were given placebo, metoclopramide, or ginger.

Does ginger reduce nausea and vomiting after anaesthesia?

Dr ME Bone and colleagues from the department of anaesthesia at St. Bartholomew's Hospital in London assessed the effect of ginger on post-operative nausea and vomiting in patients who had major gynaecological surgery. In a double-blind randomised study, 60 women were given ginger, metoclopramide (a standard drug for nausea) or placebo. Ginger and metoclopramide both reduced nausea to a similar degree compared with placebo.⁵²

These findings were confirmed by Dr S Phillips and colleagues from the department of anaesthetics at Kingston Hospital in London, England. In a prospective randomised double-blind trial, 120 women who were undergoing laparoscopic (via a keyhole in the abdominal wall) gynaecological surgery were given either metoclopramide, powdered

⁵²Bone ME, Wilkinson DJ, Young JR, McNeil J, Charlton S. Ginger root - a new antiemetic: the effect of ginger root on postoperative nausea and vomiting after major gynaecological surgery. *Anaesthesia* 45: 669-671, 1990

ginger (two 1 g capsules) or placebo. They reported their results in an article⁵³ headed “*Zingiber officinale* (ginger) - an antiemetic for day case surgery”. There was a significant reduction in nausea and vomiting in patients receiving either metoclopramide or ginger (Figure 3). The authors concluded that ginger is an effective and promising agent for preventing nausea and vomiting after anaesthesia.

Does ginger help patients with osteoarthritis?

The short answer is “no”. A group of investigators from the department of rheumatology at Frederiksberg Hospital in Copenhagen, Denmark compared ginger extract, a standard anti-inflammatory drug (ibuprofen = Brufen) and a placebo in patients with osteoarthritis of the hip of knee⁵⁴. Unfortunately, ginger was no better than the placebo.

Ginkgo biloba

Extracts of the leaves of *Ginkgo biloba* tree have been used in Chinese medicine for 5,000 years. Ginkgo is widely used in France and Germany (amounts worth 287 million deutschmarks were sold in 1991) but it is not licensed in Anglo-American or Scandinavian countries. Amongst other things, it inhibits a substance called platelet activating factor which is involved in inflammation. Since this factor may be important in the development of ulcerative colitis, Dr H Sandberg-Gertzén from the Orebro Medical Center Hospital in Sweden studied this extract in ten patients with this condition: the effects did not differ from those of a placebo.⁵⁵ It has been claimed that ginkgo is of value in dementia but this does not really stand up to examination. One review concluded that there was a minimal (3%) improvement in brain function in patients with Alzheimer’s disease.⁵⁶ Similarly, a trial in Norway found that ginkgo did not relieve the depression that some Norwegians get during the depths of winter.⁵⁷

⁵³Phillips S, Ruggier R, Hutchinson SE. *Anaesthesia* 48: 715-717, 1993

⁵⁴Bliddal H et al. A randomized, placebo-controlled, cross-over study of ginger extracts and ibuprofen in osteoarthritis. *Osteoarthritis and Cartilage* 8: 9-12, 2000

⁵⁵Sandberg-Gertzén H. An open trial of cedemin, a *Ginkgo biloba* extract with PAF-antagonistic effects for ulcerative colitis. *American Journal of Gastroenterology* 88: 615-616, 1993

⁵⁶Oken BS, Storzbach DM, Kaye JA. The efficacy of *Ginkgo biloba* on cognitive function in Alzheimer’s disease. *Archives of Neurology* 55: 1409-1415, 1998

⁵⁷Lingaerde O, Foreland AR, Magnusson A. Can winter depression be prevented by *Ginkgo biloba* extract? A placebo-controlled trial. *Acta Psychiatrica Scandinavica* 100: 62-66, 1999

Table 4. Types of ginseng and the species from which they have been derived.

Chinese ginseng	<i>Panax ginseng</i>
Japanese ginseng	<i>Panax pseudo-ginseng</i>
American ginseng	<i>Panax quinquefolium</i>
Siberian ginseng	<i>Euletherococcus senticosus</i>
Brazilian ginseng	<i>Pfaffia paniculata</i>

Ginseng

There are several varieties of herbs called “ginseng” that have been made from different plants (Table 4). This discussion is concerned with Chinese ginseng which has been used in the Orient for thousands of years as a tonic and as an aphrodisiac (sexual stimulant). It has been estimated that five million Americans consume ginseng regularly because of these purported properties. Ginseng contains chemicals called ginsenosides. Several studies have suggested that consumption of ginseng enhances physical and psychological performance and has an anti-fatigue action similar to that of caffeine.⁵⁸ Thus, soldiers in Siberia ran a race faster and telegraphists made less mistakes if they took ginseng. It may also be that ginseng affects the immune system. One recent study of nearly 400 women in Sweden with a mean age of 54 who had symptoms consistent with being post-menopausal (no longer having periods) found that ginseng did not significantly affect their overall quality of life or symptom relief.⁵⁹ It would be fair to say that the effects of ginseng on humans have not yet been studied at all rigorously.

Ginseng does sometimes have side-effects including acute hypertension, nervousness, sleeplessness and diarrhoea. It possibly may rarely cause inflammation of the blood vessels of the brain.⁶⁰

Gotu kola

This is a ground kola nut (*Cola* species) and contains caffeine in a concentration similar to that in coffee. If very large amounts are ingested, tremulousness, sleeplessness and nervousness may occur.⁶¹

⁵⁸Chong SKF, Oberholzer VG. Ginseng - is there a use in clinical medicine? *Postgraduate Medical Journal* 64: 841-846, 1988

⁵⁹Wiklund IK, Mattson LA, Lindgren R, Limoni C. Effects of a standardized ginseng extract on quality of life and physiological parameters in symptomatic postmenopausal women: a double-blind, placebo-controlled trial. *International Journal of Clinical Pharmacology Research* 19: 89-99, 1999

⁶⁰Ryu SJ, Chien YY. Ginseng-associated cerebral arteritis. *Neurology* 45: 829-830, 1995

⁶¹Siegel RK. Herbal intoxication. Psychoactive effects from herbal cigarettes, tea, and capsules. *Journal of the American Medical Association* 236: 473, 1976

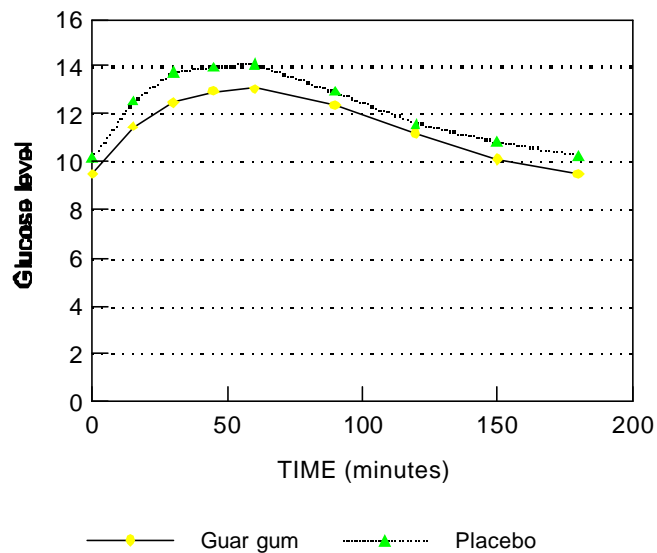


Figure 4. Blood (Plasma) glucose levels (mmol/l) at various times after a test meal of glucose in diabetic patients who were taking either guar gum or placebo.

Guar gum

Dietary fibre obtained from *Cyamopsis tetragonolobus* is called guar gum. It delays the emptying of food from the stomach and has effects on both glucose and cholesterol metabolism.

Does guar gum reduce blood glucose levels?

Nearly 20 years ago, Dr DJA Jenkins reported that addition of guar gum to the diet improved the control of sugar levels in diabetic patients.⁶² There have been many studies since in patients with mild diabetes who have not required insulin injections; the large majority of these articles have confirmed this report.

An example of such investigations is provided by the report of Per-Henrik Groop and colleagues from the department of medicine at Helsinki University Central Hospital in

⁶²Jenkins DFA. Dietary fibre, diabetes and hyperlipidaemia. *The Lancet* ii: 1287-1290, 1979

Finland. They studied 15 patients with mild diabetes with an average age of 60 years who did not require insulin. The patients took a placebo for eight weeks, then 15 g per day of guar gum for 48 weeks, then placebo for another eight weeks. They reported their results in a paper⁶³ headed “Long-term effects of guar gum in subjects with non-insulin-dependent diabetes mellitus”.

Control of diabetes can be assessed by measuring the levels in the blood of a chemical called glycosylated haemoglobin; this fell by 5.6% while guar gum was taken indicating better control. An alternative approach is to see how high blood glucose levels rise after ingestion of a test meal of glucose; the higher the glucose level, the worse the control of diabetes. Blood glucose levels were reduced by nearly 10% when a test meal was given while taking guar gum (Figure 4). The authors concluded that guar gum therapy has favourable long-term effects.

A similar study was done by Dr Helena Vuorinen-Markkola and collaborators, also from Helsinki University Hospital. In this trial, however, patients who required insulin were used. They studied 17 patients with an average age of 38 years. Again, the glycosylated haemoglobin level fell, this time by 8.3%. Moreover, the fasting blood glucose level (that is, the level before breakfast) fell by 20%.⁶⁴

Does guar gum reduce blood cholesterol levels?

Several studies have consistently shown that guar gum reduces blood cholesterol levels by 10-20%. Moreover, it is especially active against “bad” cholesterol (technically known as low density lipoprotein). An example of these studies is that of Dr Juha-Pekka Salenius and colleagues from Tampere University in Finland. They conducted a randomised, double-blind placebo-controlled trial in 40 patients who did not have diabetes but had required an operation for obstruction of the carotid artery in the neck by atherosclerosis. The patients were given either guar gum 5 g three times a day or placebo for two years. Levels of fat in the blood were measured at various times.

They reported their results in a paper⁶⁵ entitled “Long-term effects of guar gum on lipid metabolism after carotid endarterectomy”. There was a marked improvement in cholesterol levels after two years in those given guar gum compared with those who received placebo (Figure 5). All of this improvement occurred in the bad low-density lipoprotein fraction of the blood.

⁶³Groop PH, Aro A, Stenman S, Groop L. *American Journal of Clinical Nutrition* 58: 513-518, 1993

⁶⁴Vuorinen-Markkola H, Sinisalo M, Koivisto VA. Guar gum in insulin-dependent diabetes: effects on glycemic control and serum lipoproteins. *American Journal of Clinical Nutrition* 56: 1056-1060, 1992

⁶⁵Salenius JP, Harju E, Jokela H, Riekkinen H, Silvasti M. *British Medical Journal* 310: 96-96, 1995

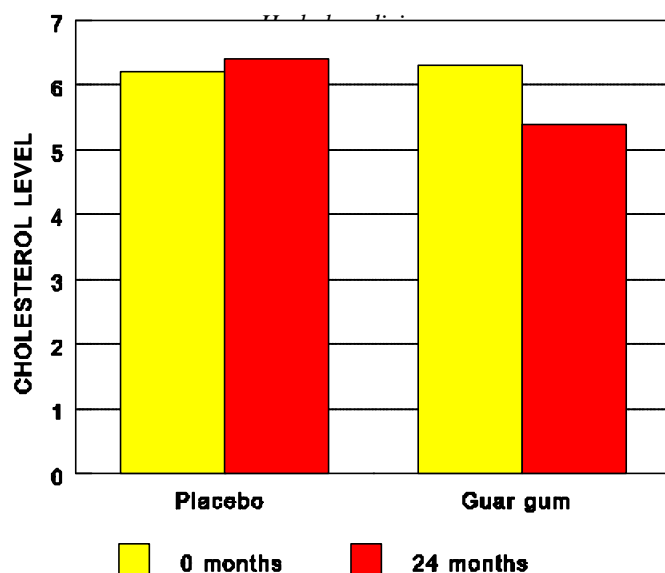


Figure 5. Blood cholesterol levels (mmol/l) in diabetics before and after taking either placebo or guar gum for 24 months.

Problems with guar gum pills

There have, however, been problems with “diet pills” called Cal-Ban 3000 which contain guar gum. Twenty six patients were reported to the Food and Drug Administration in the United States in whom these pills stuck to each other and caused obstruction of either the oesophagus or the small intestine. Some of these patients required operations and two died.⁶⁶ Such products have now been banned in Australia and the United States.

Heliotropium lasiocarpum

Leaves of this plant have been used as a herbal tea and have caused a number of cases of liver disease similar to that produced by comfrey.⁶⁷

⁶⁶Lewis JH. Esophageal and small bowel obstruction from guar gum-containing “diet pills”: an analysis of 26 cases reported to the Food and Drug Administration. *American Journal of Gastroenterology* 87: 1424-1428, 1992

⁶⁷Culvenor CCJ, Edgar JA, Smith LW, Kumana CR, Lin HJ. *Heliotropium lasiocarpum* Fisch and Mey identified as cause of veno-occlusive disease due to a herbal tea. *The Lancet* i: 978, 1986

Horseradish

The “bitter herb”, *Cochlearia armoracia*, is sometimes eaten during the Jewish Passover to commemorate the bitterness of Jewish slavery in Egypt.

- A 55 year old man consumed horseradish which was about the size of a large olive. As soon as he had finished, he became pale and sweaty and complained of abdominal pain. He then collapsed and had seizures in his right hand. He recovered after a few hours.⁶⁸

Jin Bu Huan

This is a Chinese herbal remedy in which tablets are made from *Lycopodium servatum*. It is used for relieving pain. Two types of toxic reactions have been described.

- Three small children took overdoses of tablets. They became lethargic, the pulse slowed and they breathed abnormally.⁶⁹
- Hepatitis developed 20 weeks after taking tablets in 7 previously healthy adults.⁷⁰

Kava

Kava is a beverage made from the dried root of *Piper methysticum* that is widely consumed in the Pacific islands in both ceremonial and informal situations.⁷¹ It contains substances called kava pyrones, is pungent in the mouth and has an anaesthetic effect on the tongue as well as a tranquillising action. When it is taken in excess, it causes malnutrition, rashes, shortness of breath and liver damage.⁷²

⁶⁸Rubin HR, Wu AW. The bitter herbs of Seder: more on horseradish horrors. *Journal of the American Medical Association* 259: 1943, 1988

⁶⁹Horowitz RS, Dart RC, Gomez H *et al.* Jin Bu Huan toxicity in children - Colorado, 1993. *Morbidity and Mortality Weekly Report* 42: 633-636, 1993

⁷⁰Woolf GM, Petrovic LM, Rojter SE, Wainwright S, Villamil FG, Katkov WN *et al.* Acute hepatitis associated with the Chinese herbal product Jin Bu Huan. *Annals of Internal Medicine* 121: 729-735, 1994

⁷¹Singh YN. Kava: an overview. *Journal of Ethnopharmacology* 37: 13-45, 1992

⁷²Mathews JD, Riley MD, Fejo L, Munoz E, Milns NR, Gardner ID *et al.* Effects of the heavy usage of kava on physical health: summary of a pilot survey in an aboriginal community. *Medical Journal of Australia* 148: 548-555, 1988

Kelp

Kelp tablets are made from brown seaweed. Kelp can concentrate elements such as iodine and arsenic⁷³ which can affect the skin and blood.

- A 24 year old woman began taking 10-12 kelp tablets each day. Her acne flared because of the iodine but subsided within two weeks of stopping the kelp.⁷⁴
- A 54 year old woman presented with abnormal bleeding. Investigation revealed that the number of cells in the blood called platelets were markedly reduced. She had been taking kelp tablets. She recovered with treatment which included stopping kelp consumption.⁷⁵

Laetrile

Apricots and almonds have long been used in herbal prescriptions for various ailments. They contain a substance called amygdalin. In 1952, Ernst Krebs registered amygdalin with the United States Patent Office under the trade name of Laetrile for the treatment of cancer. Since amygdalin, which is a cyanogenic glycoside, releases cyanide, he theorised that this would kill cancer cells. Despite the fact that numerous animal experiments showed no anti-tumour activity, it became enormously popular in the United States. By 1978, it was estimated that 70,000 people had used laetrile for the treatment or prevention of cancer. It became a very political matter and laetrile was legalised in 27 of the 50 US states then the US Supreme Court decreed that it could be used nationwide.

A trial was then undertaken by Charles Moertel MD from the department of oncology at the Mayo Clinic in Rochester, New York together with colleagues from other major cancer centres in the USA. One hundred and seventy eight patients with cancer were treated with laetrile and a “metabolic therapy” program of diet, enzymes and vitamins. No substantial benefit was observed in terms of cure, improvement or stabilisation of cancer. Several patients showed evidence of cyanide toxicity.⁷⁶ In an accompanying editorial, the editor of the *New England Journal of Medicine*, Dr Arnold Relman, declared that the

⁷³Walkin O, Douglas DE. Health food supplements prepared from kelp - a source of elevated urinary arsenic. *Clinical Toxicology* 8: 325-331, 1995

⁷⁴Harrell BL, Rudolph A. Kelp diet: a cause of acneiform eruption. *Archives of Dermatology* 112:560, 1976

⁷⁵Pye KG, Kelsey SM, House IM, Newland AC. Severe dyserythropoiesis and autoimmune thrombocytopenia associated with ingestion of kelp supplements. *The Lancet* 339: 1540, 1992

⁷⁶Moertel CG, Fleming TR, Rubin J, Kvols LK, Sarna G, Koch R *et al.* A clinical trial of amygdalin (laetrile) in the treatment of human cancer. *New England Journal of Medicine* 306: 201-206, 1982

books should be closed on laetrile.⁷⁷

Liquorice

Liquorice is prepared from the root of *Glycyrrhiza glabra*. This has been used in the past to treat ulcers of the stomach and duodenum. Indeed, a drug called carbenoxolone was synthesized from glycyrrhinic acid, a component of liquorice root. Unfortunately, both carbenoxolone and the liquorice root itself have a tendency to cause retention of salt and fluid, loss of potassium, and high blood pressure. Consequently, a form of liquorice was processed in which the glycyrrhizic acid was removed. Regrettably, this also removed the ulcer-healing properties.^{78,79}

- Dr S Brandon recounted how while recuperating from a coronary bypass operation, he began to eat three or four liquorice bars a day. He developed a severe headache and it transpired that his blood pressure had risen from 120/70 to 240/160. It returned to normal once he has stopped eating liquorice.⁸⁰
- A 20-year old woman complained of nausea, headache and difficulty in walking. She was thought to be hysterical and was referred to a psychiatrist. However, a blood test showed that her potassium level was extremely low and it was noted that her heart was beating irregularly. In fact, the potassium concentration was so low that she could have had a cardiac arrest. She had been eating 100-200 g of liquorice each day. She recovered when she no longer ate liquorice.⁸¹

It seems that there is considerable individual variation in susceptibility to liquorice. In the most sensitive individuals, 50 g per day is enough to produce adverse effects.⁸² Incidentally, some people may unwittingly ingest liquorice in liquorice-containing laxatives.

⁷⁷Relman AS. Closing the books on laetrile. *New England Journal of Medicine* 306: 236, 1982

⁷⁸Larkworthy W, Holgate PFL, McIlmurray MB, Langman MJS. Deglycyrrhizinised liquorice in duodenal ulcer. *British Medical Journal* ii: 1123, 1977

⁷⁹Bardhan KD, Cumberland DC, Dixon RA, Holdsworth CD. Clinical trial of deglycyrrhizinised liquorice in gastric ulcer. *Gut* 19: 779-782, 1978

⁸⁰Brandon S. Liquorice and blood pressure. *The Lancet* i: 557, 1991

⁸¹Nielsen I, Pedersen RS. Life-threatening hypokalaemia caused by liquorice ingestion. *The Lancet* i: 1305, 1984

⁸²Stormer FC, Reistad R, Alexander J. Glycyrrhizic acid in liquorice - evaluation of health hazard. *Food Chemistry and Toxicology* 31: 303-312, 1993

LongoVital

LongoVital is a herbal-based tablet enriched with vitamins. Dr A Pedersen and colleagues from the department of dentistry at Rigshospitalet in Copenhagen, Denmark conducted a randomised double-blind trial of the ability of this preparation to reduce the recurrence of mouth ulcers. They studied 20 otherwise healthy adults. When taken for six months, LongoVital significantly reduced the number of recurrences of ulcers.⁸³

Minus-Cal

This is a herbal preparation which contains eight different ingredients. It has been claimed that a ten-day course of pills with no change in eating or exercise habits would lead to a 2.25 kg weight loss. A double-blind trial showed this claim to be completely fallacious.⁸⁴

Mistletoe

Mistletoe is prepared from *Viscum album* which grows on the branches of deciduous trees. It may cause liver disease.

- A 49-year old housewife presented with nausea, lassitude and an ache in the abdomen. Blood tests suggested liver disease and a liver biopsy showed hepatitis (inflammation of the liver). No cause was found. Two years later, she returned with the same problem. It was discovered that on both occasions she had been taking herbal tablets containing kelp, motherwort (*Leonorus cardiaca*) and mistletoe (also known as skullcap, *Scutellaria galericulata*). The authors thought the hepatitis was probably due to the mistletoe.⁸⁵

Nutmeg

Nutmeg (*Myristica fragrans*) contains a chemical called myristicin which affects the brain.

- A 37-year old woman drank nutmeg tea at a party. Her skin became flushed, her pulse was fast, her speech was incoherent and she was extremely giddy. She had

⁸³Pedersen A, Hougen HP, Klausen B, Winther K. LongoVital in the prevention of recurrent aphthous ulceration. *Journal of Oral Pathology and Medicine* 19: 371-375, 1990

⁸⁴Geisler C, Horton T. Double-blind trial of herbal slimming pill. *The Lancet* ii: 461, 1986

⁸⁵Harvey J, Colin-Jones DG. Mistletoe hepatitis. *British Medical Journal* 282: 186-187, 1981

hallucinations of monsters trying to engulf her. The symptoms resolved in 24 hours.⁵²

Oleander

Ingestion of leaves of *Oleander* may be fatal.

- A 2-year old Melanesian boy began to vomit and developed an irregular heart beat after ingesting oleander. He died.⁸⁶

Orthosiphon

Orthosiphon tea is made from *Folia orthosiphonis*. It alkalinises the urine and helps prevent kidney and bladder stones due to uric acid. On the other hand, it makes the more common calcium oxalate stones worse.⁸⁷

Pau d'arco tea

This tea is also called taheebo, lapacho, ipes and so on. It is prepared from the bark of a tree, *Tabebuia* species. It has been claimed, amongst other things, to cure cancer. No published study has shown any significant effect in human cancer. It can cause nausea and vomiting and interfere with blood clotting.⁸⁸

Pennyroyal oil

Pennyroyal, also called oil of Pulegium, is obtained from *Mentha pulegium*. It is alleged to stimulate uterine contractions and has been used in attempts to induce abortion. This may have severe consequences with liver damage.⁸⁹

Peppermint oil

Peppermint oil is a mixture of oils derived from *Mentha piperita*, the major constituent being menthol. It inhibits the smooth muscle that makes the bowel contract. This explains

⁸⁶Brewster D. Herbal poisoning: a case report of a fatal yellow oleander poisoning from the Solomon Islands. *Annals of Tropical Paediatrics* 6: 289-291, 1986

⁸⁷Nirdnoy M, Muangman V. Effects of *Folia orthosiphonis* on urinary stone promoters and inhibitors. *Journal of the Medical Association of Thailand* 74: 318-321, 1991

⁸⁸Rao KV, McBride TJ, Oleson JJ. Recognition and evaluation of lapachol as an antitumor agent. *Cancer Research* 28: 1952-1954, 1968

⁸⁹Anonymous. Fatality and illness associated with consumption of pennyroyal oil - Colorado. *Morbidity and Mortality Weekly Report* 27: 511-513, 1978

why it has long been used for gastrointestinal upsets. Menthol may have acute and chronic toxic effects including irregular beating of the heart⁹⁰ and may cause confusion and incoordination.⁹¹

Is peppermint oil useful for treating the irritable bowel syndrome?

The irritable bowel syndrome has been described in the chapter on hypnotherapy. Since this syndrome is produced by muscle spasm, the effects of peppermint oil have been studied by several groups of investigators. In the first study, Dr W Rees from Hope Hospital in Manchester, England and his colleagues found a slight advantage in that patients taking peppermint oil felt a little better, but analysis of their symptoms did not demonstrate any significant effect.⁹²

On the other hand, Dr P Nash and co-workers from the Epsom District Hospital in Surrey, England found no overall improvement in patients who took peppermint oil, nor was abdominal pain reduced. They studied 33 patients in a double-blind placebo-controlled cross-over trial.⁹³ Just to make things really hard to interpret, a study of 100 patients in Taiwan ten years later was much more encouraging.⁹⁴ Those who took peppermint oil had half the rate of abdominal pain and distension, bowel frequency and the passage of gas compared with those who took placebo.

Podophyllin

Podophyllin is a mixture of resins obtained from *Podophyllum putatum* or *P. emodi*. It irritates the bowel and produces diarrhoea. If taken in excess, it may cause severe effects on the brain and nerves.

- A 20-year old woman presented with abdominal pain, diarrhoea and vomiting after taking an unknown number of Triad Herbal Laxative tablets which contained 15 mg of podophyllin, 30 mg of aloin, 20 mg of rhei and 40 mg of senna. Twelve hours later she became comatose and paralysed. She was admitted to the intensive care unit of

⁹⁰Thomas JG. Peppermint fibrillation. *The Lancet* i: 222, 1962

⁹¹O'Mullane NM, Joyce P, Kamath SV, Tham MK, Knass D. Adverse effects of menthol-containing Olbas oil. *The Lancet* i: 1121, 1982

⁹²Rees WDW, Evans BK, Rhodes J. Treating irritable bowel syndrome with peppermint oil. *British Medical Journal* ii: 835-836, 1979

⁹³Nash P, Gould SR, Barnardo DE. Peppermint oil does not relieve the pain of irritable bowel syndrome. *British Journal of Clinical Practice* 40: 292-293, 1986

⁹⁴Liu JH, Chen GH, Yeh HZ, Huang CK, Poon SK. Enteric-coated peppermint-oil capsules in the treatment of irritable bowel syndrome: a prospective, randomized trial. *Journal of Gastroenterology* 32: 765-768, 1997

Royal Perth Hospital in Western Australia and required ventilation for nearly three weeks. She made slow progress over the next three months but was left with residual weakness and loss of sensation in her limbs. These features are typical of podophyllin poisoning.⁹⁵

Psoralea

Seeds of *Psoralea corylifolia* have been used in India for 3,000 years to treat skin conditions. The plant contains chemicals called psoralens that may cause photosensitivity (accelerated sunburn).

- A 30-year old man presented with severe sunburn. He had been treating himself for white patches on the skin with a herbal infusion of psoralea. The photosensitivity cleared when he stopped taking the tea.⁹⁶

Senecio

Herbal teas are sometimes made from leaves of *Senecio* species. These plants contain substances called pyrrolizidine alkaloids. They may cause liver disease similar to that described for comfrey.⁹⁷

Senna

Senna consists of the dried leaflets and fruits of *Cassia senna* (also known as *C. acutifolia*) or *C. augustifolia*. It is an efficient laxative⁹⁸ but chronic use can sometimes cause liver disease.

- A 26-year old nurse complained of dark urine and itch. Blood tests and a liver biopsy showed she had hepatitis. She had been taking senna fruits as well as senna laxative tea. She recovered when she stopped taking the senna but the hepatitis recurred when she took senna again two months later.⁹⁹

⁹⁵Dobb GJ, Edis RH. Coma and neuropathy after ingestion of herbal laxative containing podophyllin. *Medical Journal of Australia* i: 495-496, 1984

⁹⁶Maurice PDL, Cream JJ. The dangers of herbalism. *British Medical Journal* 299: 1204, 1989

⁹⁷Anonymous. Pyrrolizidine alkaloids, *The Lancet* i: 201, 1984

⁹⁸Passmore AP, Wilson-Davies K, Stoker C, Scott ME. Chronic constipation in long stay elderly patients: a comparison of lactulose and a senna-fibre combination. *British Medical Journal* 307:769-771, 1993

⁹⁹Beuers U, Spengler U, Pape GR. Hepatitis after chronic abuse of senna. *The Lancet* 337: 372-373, 1991

St. John's wort (*Hypericum*)

St. John's wort is an extract made from the plant *Hypericum perforatum*. There are many explanations for the name. "Wort" means plant in Old English and one suggestion is that it is so named because it is said to bloom on the anniversary of the death of St John the Baptist.¹⁰⁰ It has long been used in folk medicine for a range of conditions but especially for anxiety and depression. In Germany it is very popular; in 1994, nearly 66 million daily doses worth , 26 million were used. In the past ten years, there have been a number of randomised clinical trials comparing St. John's wort, placebo and standard antidepressants.

Klaus Linde from the Ludwig-Maximilians-Universität in Germany and his colleagues reviewed these 23 trials including 1,757 patients in a meta-analysis (critical statistical review). They concluded that St. John's wort was more effective than placebo and just as effective as commonly used prescription antidepressants in the treatment of mild to moderately severe depression.¹⁰¹ In an accompanying editorial, a pharmacologist and a psychiatrist from The Netherlands concluded that although these studies were promising, they were not sufficient to establish its use in very severe depression and more studies were needed.¹⁰²

Such a study was Philipp and colleagues and reported in the *British Medical Journal*.¹⁰³ 263 patients in 18 general practices in Germany participated in a randomised double-blind trial. They were given either 350 mg of hypericum extract (St. John's wort) three times daily or various doses of imipramine, a standard antidepressant or placebo. Anxiety or depression were measured on various scales. They found that St. John's wort was effective as imipramine and improved quality of life. An accompanying commentary, a researcher from centre for complementary medicine research in Munich and a psychiatrist from Freiburg in Germany discussed whether they would use hypericum first or a chemically defined antidepressant with a low side-effect profile.¹⁰⁴ Not surprisingly, the

¹⁰⁰Rey JM, Walter G. *Hypericum perforatum* (St. John's wort) in depression: pest or blessing? *Medical Journal of Australia* 169: 583-586, 1998

¹⁰¹Linde K, Ramirez G, Mulrow CD, Pauls A, Weidenhammer W, Melchart D. St. John's wort for depression - an overview and meta-analysis of randomised clinical trials. *British Medical Journal* 313: 253-258, 1996

¹⁰²De Smet PAGM, Nolen WA. St. John's wort as an antidepressant. *British Medical Journal* 313: 141-242, 1996

¹⁰³Philipp M, Kohnen R, Hiller KO. Hypericum extract versus imipramine or placebo in patients with moderate depression: a randomised multicentre study of treatment for eight weeks. *British Medical Journal* 319: 1534-1538, 1999

¹⁰⁴Linde K, Berner M. Has hypericum found its place in antidepressant treatment? *British Medical Journal* 319: 1539, 1999

complementary medicine researcher chose wort while the psychiatrist picked the conventional antidepressant.

Thorn apple

Leaves of the thorn apple (*Datura stramonium*) have been used in cigarettes and herbal teas. These leaves contain atropine and scopolamine which affect the nervous system.

- A 28-year old man was brought to hospital in California by his wife. He had become irrational after smoking 10 "Mint Bidis" cigarettes. On examination, he was hallucinating, his face was flushed, his pupils were dilated, and his skin and mucous membranes were dry. He recovered in 24 hours.⁵²

Tonka beans, melilot and woodruff

Tonka beans from *Dipteryx* species of Brazil, melilot (*Melilot officinalis*) and woodruff (*Asperula odorata*) all contain substances called coumarins which prevent the blood from clotting.

- A 25-year old woman consulted her doctor because of heavy menstrual bleeding. Tests showed that her blood would not clot properly. She had been drinking large quantities of a herbal tea as a tonic. The recipe included Tonka beans, melilot and woodruff. She stopped drinking the tea and her blood began to clot properly.¹⁰⁵

Valerian

Valerian is prepared from the roots of *Valeriana officinalis* and is said to have sedative effects. Two investigators from the Foellinge Health Centre in Sweden carried out a double-blind placebo-controlled trial in patients who had trouble sleeping. When compared with the placebo, patients who took valerian root reported improved sleep.¹⁰⁶

Walnuts

Walnuts are the fruit of *Juglans regia*. In a study of Seventh Day Adventists in California, it was noted that people who ate nuts frequently had less heart attacks. Consequently, Dr Joan Sabaté and colleagues from Loma Linda University in California examined the

¹⁰⁵Hogan RP. Hemorrhagic diathesis caused by drinking an herbal tea. *Journal of the American Medical Association* 249: 2679-2680, 1983

¹⁰⁶Lindahl O, Lindwall L. Double blind study of a valerian preparation. *Pharmacology Biochemistry and Behaviour* 32: 1065-1066, 1989

effects of walnuts on cholesterol levels and blood pressure. Eighteen healthy men were randomly placed on one of two diets for four weeks and then the diets were reversed. The two diets were similar except that in the walnut diet, 20% of calories were provided by walnuts and lesser amounts of fatty foods, meat, margarine and butter were eaten. When on the walnut diet, there was a 12.4% fall in cholesterol levels, and most of this fall was in the “bad” low density lipoprotein fraction. Blood pressures did not change. The authors concluded that eating walnuts is helpful as far as cholesterol levels were concerned.¹⁰⁷ Similarly, a study from Spain of 55 men and women showed that when walnuts were substituted for some mono-unsaturated fats in the diet, cholesterol levels fell about 5%.¹⁰⁸

Not everyone was convinced, however. The changes may have been due to less consumption of fatty foods. Gabe Mirkin MD declared that nut sellers would use the article “to make the ridiculous claim that eating nuts prevents heart attacks”.¹⁰⁹

Herbs in Africa

African herbal preparations may cause strictures (narrowing) of the oesophagus (gullet) causing difficulty in swallowing.¹¹⁰ Acute renal failure¹¹¹ and fatal liver failure¹¹² have followed ingestion of *Callilepis laureola* and anaemia has been caused by traditional African herbal remedies.¹¹³ In South Africa in one year, 41 deaths were thought to be due to herbal poisoning. In nearly half of these cases, chemicals which affect the heart called cardiac glycosides were isolated at autopsy.¹¹⁴ In much of sub-Saharan Africa, 25% of corneal ulcers (ulcers of the clear part of the eye) are caused by traditional herbal eye medicines that are contaminated by bacteria.¹¹⁵

¹⁰⁷Sabaté J, Fraser GE, Burke K, Knutsen SF, Bennett H, Lindsted KD. Effects of walnuts on serum lipid levels and blood pressure in normal men. *New England Journal of Medicine* 328: 603-607, 1993

¹⁰⁸Zambon D et al. Substituting walnuts for monounsaturated fat improves the serum lipid profile of hypercholesterolaemic men and women. A randomized crossover trial. *Annals of Internal Medicine* 132: 538-546, 2000

¹⁰⁹Mirkin G. Walnuts and serum lipids. *New England Journal of Medicine* 329: 358, 1993

¹¹⁰Anyanwu CH, Okonwko PO. Oesophageal strictures induced by herbal preparations. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 75: 864-868, 1981

¹¹¹Seedat YK, Hitchcock PJ. Acute renal failure from *Callilepis laureola*. *South African Medical Journal* 45: 832-833, 1971

¹¹²Wainwright J, Schonland MM, Candy HA. Toxicity of *Callilepis laureola*. *South African Medical Journal* 52: 313-315, 1977

¹¹³Lowenthal MN, Jones IG, Desai M. Aplastic anaemia and optic fundus haemorrhages due to traditional herbal remedies. *Journal of Tropical Medicine and Hygiene* 81: 177-179, 1978

¹¹⁴McVann A, Havlik I, Joubert PH, Monteagudo FS. Cardiac glycoside poisoning involved in deaths from traditional medicines. *South African Medical Journal* 81: 139-141, 1992

¹¹⁵Harries AD, Cullinan T. Herbis et orbis: the dangers of traditional eye medicines. *The Lancet* 344:

Herbs in India

Traditional Ayurvedic medicine in India depends heavily upon herbal medications. These preparations often contain a variety of herbal ingredients and various side-effects may occur. For example, severe anaemia followed consumption of an Ayurvedic medicine containing a preparation derived from a plant called *Salix caprea*¹¹⁶ while another patient suffered from lead poisoning.¹¹⁷

Herbs in China

Chinese herbal medicines often contain ten or more different herbs. Consequently, it is often difficult to define effective or toxic components. Single agent herbs discussed individually elsewhere in this chapter include chuanwu and caowu, chuei-fong-tan-gen-wan, ginkgo, ginseng and jin-bu-huan. Claims have been made for the value of Chinese herbs in the treatment of just about every affliction of man. Only a few of these claims have been tested formally.

- *Hypertension*. A study of a classical Chinese herbal preparation which contained 12 herbs found no effect on blood pressure.¹¹⁸
- *Atopic eczema*. A Chinese herbal tea preparation containing ten different herbs has been shown in a randomised placebo-controlled trial to be effective in patients with atopic dermatitis (also called eczema). Forty patients were studied at a number of London teaching hospitals. It was observed that for the two months that patients drank the tea, there was a five-fold improvement in the severity of the dermatitis.¹¹⁹
- *Irritable bowel syndrome*. This condition is described in more detail in the chapter on hypnotherapy. Alan Bensoussan and colleagues from the Universities of Western

1588, 1994

¹¹⁶Baker S, Thomas SP. Herbal medicine precipitating massive haemolysis. *The Lancet* i: 1039, 1987

¹¹⁷Dunbabin DW, Tallis GA, Popplewell PY, Lee RA. Lead poisoning from Indian herbal medicine (Ayurveda). *Medical Journal of Australia* 157: 836-836, 1992

¹¹⁸Black HR, Ming S, Poll DS, Wen YF, Zhou HY, Zhang ZQ *et al*. A comparison of the treatment of hypertension with Chinese herbal and Western medication. *Journal of Clinical Hypertension*.2:371-378, 1986

¹¹⁹Sheehan MP, Rustin MHA, Atherton DJ, Buckley C, Harris DJ, Brostoff J *et al*. Efficacy of traditional Chinese herbal therapy in adult atopic dermatitis. *The Lancet* 340: 13-17, 1992

Sydney and Sydney in Australia conducted a randomised trial in 116 patients.¹²⁰ They were given either an individualised Chinese herbal preparation, a standard Chinese herbal formulation or a placebo for 16 weeks. Eighty one Chinese herbs were used with the standard preparation containing over 20 herbs. The patients, gastroenterologists and herbalists were all blinded as to who was in each group. Both the patients and the gastroenterologists assessed the symptoms using a scoring system. The scores in patients who received either of the Chinese herbal treatments were significantly better than in those who were given placebo. At the end of treatment, there was no difference between the two Chinese herbal groups but by 14 weeks after treatment, only those who had individualised herbs maintained their improvement. The authors concluded that the herbs may contain ingredients with muscle relaxing or anxiety relieving properties.

- *Respiratory infections.* Drs Liu and Douglas from the National Centre for Epidemiology and Population Health at the Australian National University in Canberra, Australia reviewed the evidence for the effectiveness or otherwise of Chinese herbs in the treatment of respiratory infections.¹²¹ They identified 27 randomised trials, 26 of which were in Chinese. They concluded that because the trial methodology of these studies was often inadequate or insufficiently documented, it is difficult to recommend the use of Chinese herbs for respiratory infections.
- *AIDS.* Dr Weber and colleagues from the University Hospital in Zurich, Switzerland evaluated Chinese herbal therapy in patients with acquired immune deficiency syndrome due to human immunodeficiency virus infection.¹²² 68 patients were randomised to receive either receive either a standard preparation of 35 Chinese herbs or placebo for 6 months. Treatment with these herbs did not improve the quality of life, symptoms and signs, level of virus in the blood or the numbers of white cells in the blood called lymphocytes which are destroyed by the virus.
- *Dermatitis.* Dermatitis is inflammation of the skin and is also called eczema.¹²³ Armstrong and Ernst from the department of complementary medicine at the

¹²⁰Bensoussan A et al. Treatment of irritable bowel syndrome with Chinese herbal medicine: a randomized controlled trial. *Journal of the American Medical Association* 280: 1585-1589, 1998

¹²¹Lieu C, Douglas RM. Chinese herbal medicines in the treatment of acute respiratory infections: a review of randomised and controlled clinical trials. *Medical Journal of Australia* 169: 579-582, 1998

¹²²Weber R et al. Randomized, placebo-controlled trial of Chinese herb therapy for HIV-1 infected individuals. *Journal of the Acquired Immune Deficiency Syndrome* 22: 56-64, 1999

¹²³Armstrong NC, Ernst E. The treatment of eczema with Chinese herbs: a systematic review of randomized clinical trials. *British Journal of Clinical Pharmacology* 48: 262-264, 1999

University of Exeter in England reviewed the literature. They could find only two trials and concluded that there was no clear evidence whether Chinese herbs do more good or harm.

Chinese medicines may be toxic, either as a result of poisoning by the herbs themselves, or because the preparations have been adulterated with heavy metal contaminants, especially lead and arsenic, or with other drugs.¹²⁴ One cannot rely on the quality of Chinese herbal medicines produced in non-Western countries. Quality control is often non-existent and the labelling of what the medicines actually contain may be quite misleading. Chinese herbal preparations manufactured in Western countries are more likely to contain what the label actually says but regulatory authorities in general do not require the manufacturers to prove that their products do what the label claims.

- *Hepatitis*. A number of patients who have taken traditional Chinese herbs have developed hepatitis.¹²⁵
- *Kidney failure*. Seventy women in Belgium developed severe kidney disease after taking a slimming regimen which included Chinese herbs.^{126,127} Thirty of these women completely lost the function of their kidneys and needed to have indefinite dialysis therapy with a kidney machine. The toxic component of the herbal mixture appears to be *Aristolochia fangchi*. Furthermore, these herbs predisposed some of the patients to developing cancer of the bladder or other parts of the urinary tract.¹²⁸ Despite widespread publication of this disaster in the medical literature, people are still taking Chinese medications and losing their kidneys.^{129,130}

¹²⁴Chan TYK, Chan JCN, Tomlinson B, Critchley JA. Chinese herbal medicines revisited: a Hong Kong perspective. *The Lancet* 342: 1532-1534, 1993

¹²⁵Kane JA, Kane SP, Jain S. Hepatitis induced by traditional Chinese herbs: possible toxic components. *Gut* 36: 146-147, 1995

¹²⁶Vanherweghem JL, Depierreux M, Tielemans C, Abramowicz D, Dratwa M, Jadoul M *et al*. Rapidly progressive interstitial renal fibrosis in young women: association with slimming regimen including Chinese herbs. *The Lancet* 341: 387-391, 1993

¹²⁷Vanhaelen M, Vanhaelen-Fastre R, But P, Vanherweghem JL. Identification of aristolochic acid in Chinese herbs. *The Lancet* 343: 174, 1994

¹²⁸Cosyns JP, Jadoul M, Squifflet JP, Van Cangh PJ, van Ypersele de Strihou C. Urothelial malignancy in nephropathy due to Chinese herbs. *The Lancet* 344: 188, 1994

¹²⁹Lord GM *et al*. Nephropathy caused by Chinese herbs in the UK. *British Medical Journal* 354:481-482, 1999

¹³⁰Yang CH, Liu CH, Chang SH, Hsu. Rapidly progressive fibrosing interstitial nephritis associated with Chinese herbal drugs. *American Journal of Kidney Diseases* 35: 330-332, 2000

- *Agranulocytosis*. Four people in the United States developed severe agranulocytosis (absence of white cells in the blood) and one of them died after taking Chinese herbal medicines mixed with aminopyrine or phenylbutazone. These are drugs that are no longer used in Western medicine because they are too toxic.¹³¹
- *Arsenic poisoning*. Seventy-four patients in Singapore were found during a 15 month period to be suffering from arsenic poisoning due to taking an anti-asthmatic Chinese herbal preparation contaminated with arsenic.¹³²
- *Lead poisoning*. A 45-year old man developed abdominal and muscle pains and fatigue and was found to be suffering from lead poisoning. He had taken a Chinese herbal medicine which had 36 ingredients, one of which was contaminated with lead.¹³³

Interactions of herbs with other medicines

Herbal medicines are being used by an increasing number of patients who often do not tell their doctor that they are doing so. This may be fraught with danger as there are a vast number of potential interactions between these two classes of agents which may have dreadful consequences.¹³⁴ For example, primrose oil should not be used together with anticonvulsants (which are used to prevent epilepsy) because it may mean the patient is more likely to have fits. Similarly ginseng may increase blood sugar levels in diabetes. Conversely, aspirin may negate any effectiveness of feverfew in the treatment of migrainous headaches. No-one can remember all these interactions and the relevant literature will have to be read. In many cases, definite information is simply not available. Anyone thinking of taking herbal medicines who is also taking regular medications should first discuss it with their doctor or pharmacist.

¹³¹Ries CA, Sahud MA. Agranulocytosis caused by Chinese herbal medicines: dangers of medications containing aminopyrine and phenylbutazone. *Journal of the American Medical Association* 231: 352-353, 1975

¹³²Tay CH, Seah CS. Arsenic poisoning from anti-asthmatic herbal preparations. *Medical Journal of Australia* ii: 424-428, 1975

¹³³Markowitz SB, Nunez CM, Klitzman S, Munshi AA, Kim WS, Eisinger J *et al.* Lead poisoning due to *Hai Ge Fen*. *Journal of the American Medical Association* 271: 932-934, 1994

¹³⁴Miller LG. Herbal medicinals: selected clinical considerations focussing on known or potential drug-herb interactions. *Archives of Internal Medicine* 158: 2200-2211, 1998

A commonsense approach to herbs

Clearly a few herbs have a beneficial effect, most are valueless apart from the psychological benefit of taking them, and some are toxic, occasionally disastrously so. How then can one calculate a risk-benefit ratio? The fact is that millions of people take herbs either regularly or irregularly. Recognising this, Huxtable⁴ has generated a list of recommendations for both regulatory authorities and for individuals.

For regulatory bodies, he believes that lists should be generated of plants considered safe for eating in quantity, those which are toxic and should be banned from herbal medicines, plants which have certain parts that are too toxic for use, and herbs which have a small risk but which would be acceptable if taken in limited quantities. Further, he considers that it should be mandatory that herbal preparations are accurately labelled as to their constituents and carry a warning that they have not been proven to be effective, that manufacturers of such products employ a qualified botanist, and that selected plants should be tested for toxicity.

Individuals can reduce the risks by observing the following guidelines:

- if you are ill, see a doctor
- if you have been taking herbs, tell the doctor
- do not take herbs if pregnant or breast-feeding
- do not give herbs to a baby
- do not take large quantities of any one herbal preparation
- do not take any herb on a daily basis
- buy only herbal preparations which list the constituents on the packet
- do not take any herbs that are known to be dangerous

The labels on herbal medicines make many claims. There is a misconception among many consumers that herbal remedies are safe because they are “natural”. It is well to remember the old adage

All that glitters is not gold