Herbal approaches to system dysfunctions

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

Treatment of:
- functional disorders such as dyspepsia, gastrooesophageal reflux, irritable bowel syndrome;
- inflammatory conditions of the upper tract, such as mouth ulcers, oesophagitis, gastritis;
- chronic gastrointestinal infections and dysbiosis;
- constipation.

Management of:
- digestive deficiency and anorexia;
- food intolerances and allergies;
- peptic ulceration;
- inflammatory diseases of the gut such as Crohn’s disease and ulcerative colitis;
- diverticulitis.

Modern research provides support for traditional herbal approaches in treating the gastrointestinal tract as strategic therapy in cases of:
- allergic conditions and inflammatory diseases of the skin, joints and connective tissues;
- oedematous and fluid retention problems;
- migraine.

Caution is necessary in applying herbal remedies to:
- severe malabsorption and malnutrition states;
- gastric cancer;
- biliary obstruction and bile duct cancer.

ORIENTATION
A self-correcting assembly line in reverse
The gut is a long passage designed to break down and process food, absorb nutrients and reject waste. Like an assembly line in reverse, it will only work efficiently if the delivery of material to the next stage is coordinated closely with the optimum rate of process at that stage. This subtle coordination is achieved by a robust and remarkably reliable network of control systems, orchestrated by a range of neurochemical and endocrine responses reacting to the material in the gut and managed by the complex circuitry and programmes of the enteric nervous system. This network of nerves, ganglia and neurohormones within the abdomen and the intestinal wall is complex enough to merit the description ‘intelligent’. Yet this is a decentralized system, not controlled entirely by the autonomic or higher nervous systems, and most ‘decisions’ are made at a very local level rather than relying on central controls.1-3

Thus when functions are disturbed, treatments at local level may have significant impact. Plant constituents have a unique range of topical effects on the gut. The case will be made that because of the fundamental linkages between gut and other body functions, these effects can account for not only a valuable contribution to the therapeutics of the digestive system but for a very wide range of systemic activity as well (see also p.166).

In phytotherapy there is a traditional emphasis on normalizing the functions of the digestive system. This
accords well with its dynamics: like other complex dynamic systems in nature, the digestive system is essentially self-correcting. A gentle trigger stimulation of an appropriate reflex response or the temporary dampening of an inappropriate response may be all that is required to prompt or allow the digestive system to revert to normal patterns of behaviour. Plant constituents seem well suited to such tasks. The following text will review some of the areas of the gut where they may work.

**Law of the gut**

Normal peristalsis is a simple example of the self-correcting and automatous nature of the digestive system. Gut activity is coordinated by a vast complex of nerve fibres, *intrinsic* fibres within the digestive tract linking to networks of *extrinsic* fibres, these in turn linked to *ganglia* within the abdominal cavity. Ascending intrinsic pathways are excitatory on the gut musculature and descending pathways inhibitory but both are activated by distension. Peristalsis follows the activation, by a bolus of food, of ascending excitatory pathways proximal to each point along the intestine and the simultaneous inactivation of the descending inhibitory pathways distal to the contraction. The propagation of the circular muscle contraction stops when there is no longer a sufficient distension stimulus ahead. The result of this arrangement is known as the 'law of the gut'. Any bolus of food material in the gut, simply by being there, is normally propelled in one direction, towards the lower bowel, the absence of such a bolus leads to quiescence.

**Relationship between absorption, secretion and motility**

As well as provoking muscular activity, or motility, the presence of food in the gut also stimulates *secretomotor* reflexes via submucous neurons and causes a proportion of water and electrolytes that are absorbed with nutrients such as glucose to be returned to the lumen.

This is a major issue: the balance of absorption and secretion of water and electrolytes in the gut involves levels of fluid and electrolytes much larger than that dealt with by the kidneys. The implications are reviewed below.

The critical control necessary is effected by a balance between activation from the gut wall (as well as mechanical distension by food, stimulants including bile acids, mucus inflammation and toxic irritation) and inhibitory inputs from other sources (mainly humoral, as discussed below). The whole coordinated response to the presence of food is referred to as the *migrating motor complex*.

Observations in healthy volunteers point to innate rhythms of absorption, secretion and motility in the small intestine and biliary tract during fasting, these marked by variations in plasma levels of gastrointestinal hormones. Current evidence indicates that this fasting periodicity is generated within the intrinsic innervation, i.e. probably by local environmental factors. After ingestion of food, the early part of the migrating motor complex cycle is characterized by low motor activity, low release of bile and pancreatic juice and a little fluid absorption ('absorptive mode'), followed by an increase in motor activity ('motility mode') and pancreaticobiliary secretions and a shift in net fluid transport in the secretory direction ('secretory mode'). There is a significant correlation between motility and secretory modes, so that they are often coupled as the 'secretomotor' mode. As elaborated below, cholinergic neurons seem to mediate the shift in their direction from the absorptive mode.

Carminative herbal remedies, such as the warming spices, reduce motility (and thus possibly secretory activity and, at least in the case of ginger, increase absorptive activity (see p.103). Increases in secretory activity and motility may be seen after the prescription of bitters, cholagogues and stimulating laxatives. However, these responses are not always predictable (in the case of bitters and cholagogues they may even be the opposite reaction in some cases) and it is also observed that reactive bowel looseness may follow a much wider variety of treatments. It appears that increases in gut activity are programmed as a response to any potentially perturbing influence, presumably as a simple defence mechanism.

If there is gut infection or food intolerance, luminal antigens or bacterial products may be detected by the immune system. This may trigger a cascade of events associated with the release of inflammatory mediators. These mediators lead to increased motility and secretory patterns that are characterized by strong muscular contractions, copious secretion and diarrhoea.

**The gut and fluid balance**

Diarrhoea is an extreme pattern of fluid and electrolyte loss which, as a consequence of enteric infections and malnutrition, is still the most common immediate cause of death around the world. In developed societies it is rarely as dangerous as it is in impoverished regions, where rehydration with fluids and electrolytes is a critical life-saving measure (as seen in the sugar and salt solution widely used by aid agencies...
around the world for the purpose). Nevertheless, diar-
rhoea is relatively common, reflecting a wide variety
of events in the gut, from food poisoning and enteric
infection through hepatobiliary activity (bile being a
prominent potential irritant of the gut wall), food
intolerance, to irritable bowel behaviour. Often diar-
rhoea is of short duration and is not explained. It is
even seen as a benign transient cleansing event in
some healing strategies ('better out than in').

Any looseness of the bowel involves the loss of con-
siderable amounts of fluid and electrolytes which,
with the certainty of the excretion of a wide range of
other materials, means that the gut can dwarf the func-
tion of the kidneys. Even modest fluctuation in bowel
consistency and frequency can have significant impact
on fluid balance in the body.

Some herbal traditions use remedies that loosen
or bulk the bowel contents to reduce fluid accumula-
tion and retention and even in some circumstances
reduce weight. Cathartic remedies were included
among those with drastic diuretic effects in the
Chinese tradition and stimulating anthraquinone
laxatives clearly lead to fluid and electrolyte loss.
In the French tradition, even bulk laxatives and
fibre are used to reduce weight associated with fluid
retention.

By contrast, there are also a range of approaches to
reducing bowel looseness if this is seen as harmful.
These include the temporary use of astringent tannins
that reduce reflex irritation of the bowel from the
higher reaches of the gut in the case of gastroen-
teritis (see p.34), the aromatic digestives and volatile
antispasmodics (see p.29) and the use of demulcent
and topically antiinflammatory remedies like
Althaea (marshmallow), Filipendula (meadowsweet),
Glycyrrhiza (licorice), Calendula (marigold) and, for
short-term use, Symphytum (comfrey).

Stomach activity

The stomach's functions are closely coordinated with
the rest of the digestive tract. It stores masticated food
as a hopper, delivering its acidic contents into the alka-
linized duodenum only at a rate that can be alkalini-
zied: too fast and it damages the duodenal wall, too
slow and it leads to discomfort and inhibits digestion
of the following meal.

Regulation of gastric emptying represents one of
the most important protections of small intestinal
structure and function. For example, in humans, gas-
tric emptying is slowed in proportion to the energy
density of the meal, which will level out the rate of
energy delivery to the duodenum.10

The stomach is also the first significant point of
contact with most herbal remedies. Many have imme-
diate effects on its function, increasing secretions of
acid, pepsin and mucus (bitters and pungent con-
stituents), calming activity (muclagninous, astringent
and some aromatic and antispasmodic remedies) or
stimulating motility (saponins and emetic alkaloids). It
is often highly sensitive to even minor doses of herbal
remedies.

Healthy upper digestive function is important for
maintaining health and preventing disease. Gastric
secretion declines with age11 and a significant percent-
age of people aged 65 years or older have abnormally
low gastric acidity.12 Low acidity can lead to poor
nutrient absorption and abnormal bowel flora. Patients
with reduced gastric secretion are more susceptible
to bacterial and parasitic enteric infections.13 The con-
tribution of poor upper digestive function to the
chronicity of intestinal dysbiosis is often overlooked
by therapists: the herbal practitioner has bitters and
pungent principles to employ.

The chemical mediators of digestive activity

The coordination of these and digestive processes is
mediated in the first instance by batteries of neuro-
humoral agents, chemicals that range from familiar
endocrine hormones, standard neurotransmitters and
chemical mediators, found also in the central nervous
system and other body tissues, to gut-specific chemical
agents. Each may be elicited by several receptor types
in the gut wall and thus may be sensitive to different
secreted, metabolized, dietary or pharmacological
agents. These interactions, although highly complex
and multilayered, are all integrated into a whole con-
trol mechanism for digestive activity.14 Many con-
stituents of herbal remedies are likely to interact with
chemical mediators and this may provide some mech-
nisms for their effect on gut function. When these
interactions are combined with similar examples in the
nervous, endocrine, immunological and reproductive
systems it appears that herbal medicine might gen-
unely provide a unique 'psychoneuroimmunological'
strategy for the widest body disharmonies. To centre
this range of activity around gut function would sim-
ply restate an intuition that has pervaded much tradi-
tional medicine.

A vital part of the coordination of gastric emptying
referred to above is the control of gastric acid secre-
tion. Serotonin or 5-HT receptors have been shown to
mediate the emetic reflex15 and antagonists of the main
receptor concerned, type 5-HT3, have been developed
to reduce emesis of cancer chemotherapy. (These are
also found to have anxiolytic effects, confirming the overlap in enteric and higher nervous mediators.\textsuperscript{16} There is evidence, referred to in its monograph later in this book, that ginger also acts on this receptor. 5-HT is also a likely mediator in the lower bowel of both sensorside activity and the diarrhoeal response.\textsuperscript{17} It is possibly implicated in the action of the emetic plant remedies.

One common phytotherapeutic constituent has already established a number of contrasting effects on several neurohumoral mechanisms. Capsaicin, from \textit{Capsicum spp}, at quite low concentrations blocks the release of calcitonin gene-related peptide, a peptide found in enteric ganglia and known to be elicited directly by local mucosal irritation leading to increased peristaltic and secretomotor activity. Capsaicin thus results in a concentration-dependent decrease in peristaltic activity following mucosal stimulation.\textsuperscript{18} Capsaicin also blocks an alternative stimulant to intestinal contraction, vasoactive intestinal peptide: VIP mediates the effects of noradrenaline and local stressors (like acute hypoxia in vitro) which both depress cholinergic transmission and stimulate non-cholinergic contractions.\textsuperscript{19,20} On the other hand, capsaicin is also known to induce intestinal contractions as a stimulant of sensory substance P-containing neurons\textsuperscript{21} which are also activated by various luminal stimuli such as the presence of food metabolites and simple physical distension to stimulate intestinal contractions. Incidentally, this is probably the direct mechanism for the hyperperistalsis induced by cholera toxin – perhaps capsicum is contraindicated in cholera. The consumption of hot spices has long been a feature of traditional herbal therapeutics (see also the discussion of ‘acupharmanology’ below) and the effects of Capsicum on the wider physiology have been confirmed in studies of cutaneous blood flow after ingestion of chillis; variable increases in blood flow have been observed, most consistently in the abdominal area.\textsuperscript{22}

One of the most important hormonal regulators of the digestive process is cholecystokinin. This hormone is concentrated in the wall of the upper small intestine and is secreted into the blood in the ingestion of proteins and fats and has also been implicated in the action of bitters. The physiological actions of cholecystokinin include stimulation of pancreatic secretion and gallbladder contraction and regulation of gastric emptying.\textsuperscript{23} It is produced particularly by carbohydrate foods and appears to promote a feeling of fullness.\textsuperscript{24,25} In humans it has been found that foods that lead to high levels of both cholecystokinin and satiety (e.g. bran) are associated with lower postprandial blood sugar and insulin levels, compared with refined carbohydrate.\textsuperscript{26} This may be due to the physical characteristics of the carbohydrate but may also suggest that cholecystokinin helps to suppress hyperinsulinaemia. Cholecystokinin has also been observed to suppress feeding of strongly tasting foods in animals, in direct relation to the strength of the taste.\textsuperscript{27} There are suggestions that an increase in cholecystokinin production with age may contribute to the relative anorexia in the elderly.\textsuperscript{28}

Gastrin is a polypeptide hormone which is secreted following vagal nerve activity and by the bulk presence of food in the stomach. Some food extractives, including partially digested proteins, alcohol and caffeine have an additional effect and some of the more stimulating plant constituents like resins, spice ingredients and some saponins are likely to compound this activity. Gastrin stimulates gastric acid and pepsin secretion. It extends and indeed multiplies the short-term effect of vagal stimulation on gastric secretions.

When gastric hydrochloric acid spills over into the intestine it lowers intestinal pH and stimulates the secretion of secretin. This acts to stimulate Brunner’s glands and bicarbonate-rich bile and pancreatic secretions so as to alkalinate the intestinal contents. Secretin is also a potential mediator of the antilulcer actions of mucosal protective agents; it appears that secretin inhibits gastric acid secretion via endogenous prostaglandins.\textsuperscript{29} Glycyrrhiza (licorice) stimulates the release of secretin in humans.\textsuperscript{30}

There are a number of herbal constituents shown to have effects on neurotransmitter mediators. These effects are also likely to impinge on gut function as many mediators have been found common to both. Gamma-aminobutyric acid (GABA), probably affected by a number of plant constituents, is produced in the myenteric plexus in the gut wall and acts via GABA receptors to both stimulate cholinergic and relax VIP motor neurons contributing to both components of the peristaltic reflex.\textsuperscript{31,32}

**Disturbed intestinal permeability**

The role of the gut wall is to allow for selective absorption of nutrients while providing vital protection against intrusion into the body tissues of harmful substances from the lumen. NSAID treatment has adverse effects on enterocyte mitochondria which may predispose the mucosa to absorption of bacterial and other large molecules that provoke a local inflammatory response. A similar mechanism may operate in patients with untreated Crohn’s disease, who show abnormally high permeability. Remission of Crohn’s induced by treatment with elemental diets coincides with a
reduction in permeability. Significant correlations have been seen between permeability and plasma IgA concentrations in kidney disease and between permeability and the passage of neutrophil chemotactic agents. It is likely that some plant constituents could reduce excessive intestinal permeability. Tannins are likely to have a limited short-term effect at least in the upper reaches of the tract and healing plants like *Matricaria recutita* (chamomile), *Filipendula* (meadowsweet), *Ulmus* sp (slippery elm), *Glycyrrhiza* (licorice), *Calendula* and *Symphytum* (comfrey) have long been applied with this effect in mind. In theory local anti-inflammatory activity might effectively reduce some types of increased permeability. However, the most promising effect on intestinal permeability is likely to lie in changing biliary constituents, using hepatics and choleretics (see p. 183).

**Intestinal flora**

The balance of flora populations in the gut is highly complex but, in steady-state health and dietary conditions, probably reasonably stable. In humans, for example, there seems to be a moderately predictable sequence of colonization after birth and through to adulthood with fluctuations in the relative numbers of aerobic and anaerobic bacteria in newborns up to a total of $10^{10}$/g wet weight, reaching in adulthood between $10^6$ and $10^7$/g wet weight of aerobic and between $10^9$ and $10^{11}$/g wet weight of anaerobic bacteria. The benefits of a healthy bacterial population in the gut are clear. Anaerobic bacteria in particular are shown to be responsible for considerable secondary digestion and to decrease intestinal transit time. Normal bacteria like *Escherichia coli*, *Enterococcus faecalis* and *Bacteroides distasonis* have been shown to help protect the gut from pathogenic infiltration and there are a number of other non-specific defences known. Mechanisms are likely to include modification of bile acids, stimulation of peristalsis, induction of immunological responses, competition for substrates and possible elaboration of various bacteriostatic substances. The intestinal flora also contributes to non-specific defences against immunological challenge from dietary antigens by helping to reduce their uptake across the mucosal barrier. The populations of bacteria and other organisms are, however, obviously dependent on their food supply, i.e. dietary material and its metabolites, reaching the lower intestine. Variation in, for example, lactose and protein levels in infant foods and sugar intake in adults has been shown to have dramatic effects. Probably the most widespread impact on bacterial populations in the gut in modern times, however, is the use of antibiotics. It has long been established that this has an adverse effect on normal gut flora especially if the antibiotics are poorly absorbed from the gut and particularly if they are active against anaerobes. There are potentially negative influences of the bacterial flora in some circumstances. In immunocompromised patients even normal bacteria can cause life-threatening infections. Bacterial hydrolysis of pharmacological agents, including those from plants, as well as other substances left in the intestine may be helpful but may also lead to the possibility of increased gut exposure to carcinogens.

The relationship of bile products with intestinal flora is complex and works in two directions (see also p. 184). Bile salt metabolites variably stimulate growth in bacterial populations, while anaerobic bacteria act on bile products to produce volatile fatty acids that control other pathogenic bacteria. A particularly revealing insight into the relationship is seen in the case of bowel cancer. There are three known endogenous components that affect development of colorectal cancer – colonic bacteria, the mucus layer and bile acids. The major effects of the bacteria are deconjugation and reduction of bile acids, activation of mutagen precursors, fermentation and production of volatile fatty acids, formation of endogenous mutagens and physical adsorption of hydrophobic chemicals. The mucus layer covering the surface acts as a barrier and its composition changes in premalignant and malignant colon tissue. The secretion of protective mucus is elevated by plant cell wall components in the diet. Mucus has some hydrophobic properties and its presence may alter the effect of bile components and bacterial metabolites on the gut wall. Bowel bacteria have been linked to another cancer. In looking for reasons to explain the epidemiological link between high-fibre diets and lower risks of breast cancer, it was found that both raising fibre content in the diet and suppressing microflora with antibiotics led to reduced intestinal reabsorption of oestrogens and lower levels circulating in the blood. It was concluded that intestinal microflora raise oestrogen levels by deconjugating bound oestrogens that appear in the bile, thereby permitting the free hormones to be reabsorbed. The beneficial levels of a high-fibre diet are likely to be the dominant factor in women susceptible to breast cancer, especially as there is evidence that bacterial flora actually enhance some of its wider benefits. Correction of disturbed or damaging bowel flora remains a matter of some contention. There seems,
after all, little value in the administration of therapeu-
tic cultures such as lactobacillus and yoghurt in distur-
bances associated with disrupted gut flora. The value of
a high bulk diet with reduced simple sugars intake
is, however, more accepted. The phytotherapist might
combine the benefits of such dietary moves with atten-
dance to hepatic and biliary function and with bitter or
aromatic digestive insurance that food matter is well
rendered in the upper digestive tract. The value of
direct agents like Artemisia absinthium (wormwood),
Marsdenia (condurango) and Allium sativum (garlic)
on disruptive bowel flora is likely to be upheld.

Plant fructooligosaccharides have recently been
claimed to have ‘prebiotic’ properties, i.e. to promote
the colonization of the bowel with beneficial flora, and to be useful in dysbiotic conditions like candidia-
sis. They are a mixture of oligosaccharides consisting
of glucose linked to fructose units. They are widely
distributed in plants such as onions, asparagus and
figs and in herbal remedies such as Cynara (arti-
choke leaf) and Urginea (squill). They are not hydrol-
ysed by human digestive enzymes but are utilized by
intestinal bacteria such as Bifidobacteria, Bacteroides
fragilis group, Peptostreptococci and Klebsiellae. In
clinical studies, improvement of faecal microflora was
observed on oral administration of fructooligosaccha-
rides at 8 g and 12.5 g per day; the population
of Bifidobacteria in faeces increased substantially
compared with before the administration.

It is likely that other animals metabolize fructo-
ooligosaccharides differently but they point to other
possible effects. Significant beneficial reduction in
small intestinal overgrowth has been seen when
dogs’ diets were supplemented by fructooligosaccha-
rides. Experiments with mice demonstrate that
dietary short-chain fructooligosaccharides, unlike
wheat bran, counteracted advanced stages of colon
carcinogenesis, possibly, the authors suggest, via stimu-
lation of antitumour immunity by modulation of the
colic ecosystem.

Acupharmacology – a pharmacological basis
for herbal therapeutics?

Modern insights into the fate of much plant material in
the digestive tract support a view that a herbal remedy
mostly affects the gut and its immediate surroundings.
Adding what is known of the interrelationships
between digestive activity and the wider body’s phys-
ology allows the modern phytotherapist to develop a
rationale for the effect of herbal medicines on the body
that is both unique to these remedies and provides
potentially very powerful therapeutic strategies.

The body presents two distinct surfaces to the
outside world.

The skin is the body’s obvious interface. It is also a
sensitive template from which it is possible to trigger a
wide range of reflex responses elsewhere in the body.
When one touches a very hot object, for example, the
response is both complex and predictable. As well as
the obvious avoidance responses, however, there is the
potential for more constructive effects. The benefits of
touch, caressing and massage are increasingly well
understood. There are a number of established mech-
nisms by which cutaneous stimulation can have an im-
pact on both specific internal functions and on general
well-being: for example, via dermatomes and spinal
afferents, stretch sensor stimulation and somatopsy-
chological connections. These have been used to explain
the potential benefits of hands-on therapies.

There are other less well-established mechanisms,
possibly involving neurohormonal reflexes, that have
been suggested as underpinning acupuncture, acu-
pressure and shiatsu and possibly reflexology – the
claim that stimulating particular points on the body
surface can effect substantial benefits elsewhere. Such
possible mechanisms are not the subject of this text
except in that they extend the view that the skin is a
sensitive organ that allows quite crude stimulation of
what in effect are triggerpoints to effect complex reflex
responses elsewhere in the system. If stimulation of
acupoints leads to changes in neurohormones like enkephalin, then the fact that the stimulant was a steel,
stone or gold needle, a warming moxa or finger pres-
sure seems less important than the point that was
stimulated. It appears more likely that such reflexes
are programmed, even wired, into the system, as part
of the marvellous complexity that is the living body.

If the skin has the potential for mediating complex
effects within the body then the second of the body’s
surfaces has much greater potential. The lining of the
gastrointestinal tract is a much greater surface than the
skin and, with the finest villous foldings, makes up an
area covering several playing fields. It is also a dramat-
ically more complex surface structure. Unlike the skin,
which has primarily a protective function, the gut sur-
f ace has a literally intimate engagement with the outer
world. It provides by far the largest exposure of the
body’s immune system and other defences to the out-
side world (and is thus associated with the largest con-
centrations of white blood cells). It has to render
whatever diverse material is presented to it to a safe
and assimilable form, then selectively absorb some
of it and excrete the remainder. It has to coordinate the
processes of secretion and absorption with the agitation
and movement of material down a tube of over
Herbal approaches to system dysfunctions

7 metres. It supports a complex population of microflora to augment its digestive processess. The coordination necessary for all these activities is mediated by a vast network of nerve fibres and ganglia, the enteric nervous system, and neurohormones of such complexity that has all the characteristics of an intelligent system.

The main inputs into the decision-making processes involved in digestion are a vast array of receptors and sensory tissues along the gut wall. Each of these provides signals for some effector function elsewhere in the gut or indeed elsewhere in the body. The effects of the following archetypal plant constituents discussed in this chapter and in Chapter 2 can clearly be seen to work primarily on the digestive tract.

### Archetypal plant constituents with primary impact on the gut

- Mucilages
- Tannins
- Bitters
- Pungent constituents
- Anthraquinone glycosides
- Resins
- Essential oils

The gut is a sensate entity; it functions on the basis of information it receives itself from its environment. As the rest of the body relies on the digestive system to function, this sensory being is literally fundamental.

There are several general ways by which stimulation along the digestive tract can influence wider body functions, some of which were reviewed earlier.

#### As a source of enteric reflexes

Through neural links forged during embryonic development, stimulation of neural receptors in the gut wall is theoretically able to effect responses in other areas. Vagal modulation can lead to wider adjustment of autonomic activity in the body and particularly in bronchial muscle activity and cardiovascular control signals originating in the thorax. Pungent principles (hot spices) increase blood flow in other areas after ingestion.29

#### As an endocrine organ

The gut is responsible directly or indirectly for the secretion of insulin, glucagon, somatostatin, gastrin, cholecystokinin and a range of other hormones and transmitters with wide effects on body functions.

### Through common neurohormonal mechanisms

The gut wall contains many regulatory neurosecretory cells that produce agents with receptors elsewhere in the body. One obvious example of the neurohormonal and endocrine links is the close relationship between digestive status and emotion.

#### As the body's largest concentration of immunological activity

The body has by far its greatest exposure to immunological challenge in the digestive system.

#### As a potential route of access for pathogenic materials

Damage to the digestive defences, the digestive secretions or the intestinal wall can permit the absorption of dangerous materials. As well as the extra strain this may put on the immune system referred to above, there are other potential problems that can arise for which digestive treatments may prove beneficial.

#### As a determinant of blood sugar levels

The awesome effects on behaviour, the functions of the central nervous system and on the major body hormones of undue fluctuations in levels of blood glucose is a reflection of the importance not only of good carbohydrate intake but of coordinated secretion of enteric hormones like gastrin and cholecystokinin.

#### Via the enterohepatic circulation

The absorption of materials from the gut in the portal bloodstream to the liver presents the latter with its main metabolic load. Hepatic processing of this and other circulating material from elsewhere in the body may include excretion of metabolites into the bile. Depending on the extent of secondary breakdown of these metabolites in the gut, particularly with the activity of gut microflora, these products may to varying extents be reabsorbed for recirculation around the body's general circulation. Levels of many physiological and pharmacological agents in the body can therefore be significantly affected by changes in digestive activity.

#### As the body's major eliminatory organ

The bowel is the obvious outlet not only of digestive residues but also of bowel microflora detritus and bile products. Any change in eliminatory functions is likely to have significant effects in the body; different
traditions around the world have linked catarrhal states, susceptibility to infections, skin and joint diseases, mood disturbances and menstrual problems to disturbed bowel eliminations. The almost universal use in early times of drastic emetics and purgatives, both involving dramatic increase in bile eliminations for the treatment of acute diseases, reflects a widespread human instinct that these eliminatory functions were important.

As the home for the major populations of symbiotic and parasitic organisms in the body

The activity of the gut microflora has an impact on the levels of many nutrients, hormones and drugs in the body.

As the source of all physical and much emotional nourishment and replenishment

The most obvious truism yet provides the herbalist with a potent mechanism for effecting better health. Remedies that could be shown to improve digestive performance would be important elements in convalescence and recuperation.

The main advantage of considering herbal therapeutics as acupharmacology is that it provides a basis for rapid responses, a therapeutics based on intervention and review of early results on an iterative process towards recovery. In this approach to treatment, feedback is almost immediate and a muscular strategy of repair can be constructed.

PHYTOTHERAPEUTIC PRINCIPLES

Archetypal digestive remedies

Following Chapter 2, the approach adopted in this and the following chapters is to look at key chemical groups in plants, the 'archetypal plant constituents', rather than at individual remedies. The fragmentary nature of research support for herbal therapeutics is always a major limitation but fortunately in the area of the digestive tract there is a more than usually reliable experience of efficacy; the digestive tract is one of the most accessible organs in the body and most traditional treatments relied on immediate clinical effects.

Dosage and other prescription practicalities

Most experience of the impact of herbal remedies on the digestion was associated with the use of heroic doses applied to acute indications. Emetics and cathartics were often the first resort of treatment, and dysentery, life-threatening gastrointestinal infections and hepatitis the most common indications. Even with more robust constitutions the occasionally dramatic effects of eating unrefrigerated food were very familiar. The remedies outlined above were favoured because they had rapid effect.

The gastrointestinal tract provides a large surface area and the processes of digestion quickly denature and dilute remedies. For most of the effects referred to, therefore, relatively large doses of plant need to be taken (and the preparation needs to contain the relevant constituent – it is no good having a convenient extract of plant without its mucky mucilage, resin or tannin if those are the constituents one needs!). Many modern prescriptions based on quantities measured in drops or milligrams would be unlikely to have much impact on this system. The main exceptions are the bitters and hot spices or other cases where the target receptors are close to the point of entry or the agent is particularly powerful.

It is also likely that for many effects long-term treatment is inappropriate. The cases of tannins and anthraquinones are examples of when this may even be hazardous. In practice, one finds that for most gut-mediated mechanisms the effect is strongest in the earliest days of treatment and often wears off quite quickly.

It is much better to work on short-term prescriptions of relatively strong doses, constantly monitoring for immediate feedback and adjusting accordingly. In any long-term strategy it is generally wise to treat intermittently, maintaining the option of frequent prescription changes according to results.

BULK LAXATIVES

Plant remedies traditionally used as bulk laxatives

Linum (linseed), Plantago ovata (ispaghula), Plantago psyllium (psyllium seed and husk).

Indications for bulk laxatives

- Constipation
- Inflammatory bowel disease
- Blood sugar disturbances, including the dietary management of diabetes
- Some dyspeptic and gastric inflammatory conditions

Other traditional indications for bulk laxatives

- Fluid retention
- Obesity
Herbal approaches to system dysfunctions

Contraindications for bulk laxatives
There are few contraindications for the use of fibre and the bulk laxatives. However, their supplementation should be kept under review in cases of:

- iron deficiency anaemia;
- osteoporosis;
- chronic malnutrition.

Traditional therapeutic insights into the use of bulk laxatives
Some of the bulk laxatives were also used for their obvious mucilaginous properties (see below) in reducing inflammatory problems in the upper sections of the digestive tract.

Application
Bulk laxatives need to be taken whole as powdered material, most conveniently in capsule form, with food.

Long-term therapy with extra supplementation of soluble fibre is not always advisable and both soluble and insoluble fibre intake should be reviewed where absorption of mineral nutrients is a critical issue.

Advanced phytotherapeutics
Bulk laxatives may also be usefully applied in some cases (depending on other factors) of hypertension.

EMETICS
Plant remedies traditionally used as emetics
Cephaelis (ipecacuanha), Urginea (squill).

Indications for emetics
- Ingestion of poisons

NB. Emesis has been demonstrated as an inefficient way to remove poison material, with appreciable amounts being forced into the small bowel, and activated charcoal as a non-emetic treatment for poisoning is likely to be superior, for example in paracetamol poisoning.

Other traditional indications for emetics
- Any acute toxic and infective condition
- Bronchitis

Contraindications for emetics
The use of emetics is contraindicated in the following:

- Poisoning associated with coma, convulsions
- Poisoning with petroleum products or corrosive substances
- Any debilitated condition or constitutional weakness

Traditional therapeutic insights into the use of emetics
Emetics were used as a first line of treatment especially for enteric and bronchitic infections and for any evidence of biliary toxicity. It was always understood that their use was essentially debilitating so a robust constitution was an essential prerequisite.

Application
For poisoning emergencies use, for example, 15 ml of ipecac syrup for children and adults, repeating the dose in 15–30 minutes if necessary. If Ipecac is unavailable soapy water or detergent with water may be used or manual stimulation of the gag reflex with finger or blunt instrument may be tried.

MUCILAGES
Plant remedies traditionally used as mucilages
Althaea (marshmallow), Ulmus (slippery elm), Plantago lanceolata (ribwort), Symphytum (comfrey), Tussilago (coltsfoot), Chondrus (Irish moss), Lobaria (lungwort), Verbascum (mullein).

Indications for mucilages
- Dyspeptic conditions especially with hyperacidity
- Inflammatory diseases of the digestive tract, e.g. reflux oesophagitis, gastritis, peptic ulceration, enteritis, ileitis and colitis
- Non-productive, irritable cough
- Topically: inflamed lesions, pruritus

Other traditional indications for mucilages
- Dysuria

Contraindications for mucilages
The use of mucilages is either contraindicated or at least inappropriate in the following:

- Congestive bronchial and catarrhal conditions
- As a substitute for curative treatments where these are available
Further traditional therapeutic insights into the use of mucilages

Mucilaginous plants were associated in Chinese medicine with a diuretic effect and were also seen as valuable tonics in debilitated conditions, especially with chronic wasting dry lung diseases, such as tuberculosis.

Application

Mucilages should be taken in a formulation that preserves their physical characteristics. Encapsulation is probably the most effective way of administering the whole material (subject to the contents being adequately sterilized) but cold aqueous infusion is the most efficient extraction process, using alcohol later for preservative purposes. Depending on the indication, they may be taken before meals (for digestive problems of the stomach and small intestine), during (for some stomach problems) or after meals (in the case of reflux oesophagitis/hiatus hernia). As mucilaginous expectorants, they may be taken at any time and as frequently as required.

Long-term therapy with mucilages presents few problems but as they are essentially management treatments, such use may disguise the need for more substantial treatments.

SAPONINS

Plant remedies traditionally used for saponin effects

Primula (cowslip), Glycyrrhiza (licorice), Cephaelis (ipecacuanha), Quillaia (quillaia), Senega (snakeroot), Trigonella (fenugreek).

Indications for saponin-containing remedies

- Bronchial congestion
- Digestive difficulties

Other traditional indications for saponin-containing remedies

- As tonics for debilitating conditions
- As hormonal modulators

Contraindications for saponins

- The use of saponins is either contraindicated or at least inappropriate in the following.
  - Topically to open wounds
  - Coeliac disease, fat malabsorption and vitamins A, D, E, and K deficiency
  - In some upper digestive irritations

Traditional therapeutic insights into the use of saponins

Saponins are common constituents in plants used in Chinese and Asian medicine as tonics and harmonizing treatments. Modern pharmacological interest in the effects of ginseng has raised speculation that as steroidal molecules, some saponins may modulate steroid hormone control mechanisms in the body (see also p.43).

APPLICATION

Saponin-rich plants may be taken before meals or if there is a sensitive stomach immediately after eating.

Long-term therapy with saponin-rich plants should be avoided unless dosage levels are small or clear benefits are apparent which diminish if treatment is stopped. The impact of saponins on digestion and absorption is insufficiently clear.

TANNINS

Plant remedies traditionally used for tannin constituents

Hamamelis (witchhazel), Potentilla tormentilla (tormentil), Quercus (oak), Agrimonia (agrimony), Geum (avens), Krameria (rhatany), Geranium (cranesbill), Carduus benedicta (blessed thistle), Acacia catechu (catechu), Bidens (bur-marigold), Alchemilla (ladies mantle), Polygonum (bistort), Sanguisorba (burnet).

Indications for tannins

- Inflammation of the upper digestive tract
- Diarrhoea following gastrointestinal inflammation
- Topically: open, discharging lesions, wounds, hemorrhoids and third-degree burns

Contraindications for tannins

The use of tannins is either contraindicated or at least inappropriate in the following.

- Constipation
- Iron deficiency anaemia
- Malnutrition
Herbal approaches to system dysfunctions

Traditional therapeutic insights into the use of tannins

Tannins were used throughout history for forming leather from animal tissues and as effective cauterizing agents for burns and other open wounds. The astringent sensation on tasting was a simple guide to efficacy in staunching diarrhoea and other discharges.

Application

Tannins should be taken after food in most cases. For some lesions of the upper digestive tract, short-term use between meals or before food is justifiable.

Long-term therapy with high doses of tannins is to be avoided.

PUNGENT CONSTITUENTS

Plant remedies traditionally used for warming effects

Capsicum (cayenne), Zingiber (ginger), Armoracea (horseradish), Curcuma (turmeric).

Indications for pungent constituents

- Congestive dyspepsia
- Some cases of nausea, emesis, colic, diarrhoea and other hyperperistaltic conditions
- Bronchial congestion
- Poor peripheral circulation
- Topically: for joint and muscle pain, subdermal inflammations

Other traditional indications for heating remedies

- Any effect of cold on body systems

Contraindications for pungent constituents

The contraindications for heating remedies are constitutional rather than symptomatic. The same symptoms in two individuals may provide contrasting indications for this group of remedies. The use of hot spices may be contraindicated or inappropriate in the following:

- Concurrently with powerful drug regimes where dosage levels are critical
- Hyperacidity conditions and gastrooesophageal reflux
- Hepatitis
- Some enteric and bowel inflammatory states with diarrhoea
- Some cases of chronic nephritis

Traditional therapeutic insights into the use of pungent constituents

Early insights into the impact of ‘heating’ the body have become very developed in some traditions. Most early physicians would have been familiar with the issues that determined how far to ‘heat’ or ‘cool’ a prescription (see p.4)

Application

Hot spices can feature in prescriptions taken at various times of the day. When taken primarily for their impact on digestion, they may be taken before meals if there are no local inflammatory conditions in the upper digestive tract, with or after meals if the gut wall proves to be sensitive or there is a tendency to hyperacidity.

Long-term therapy with pungent remedies is acceptable if the individual is comfortable with the regime. It should be discontinued if there are any digestive discomforts.

AROMATICS

Plant remedies traditionally used as aromatics

Elettaria (cardamom), Angelica, Carum (caraway), Pimpinella (aniseed), Foeniculum (fennel), Cinnamomum spp (cinnamon), Anethum (dill), Alpinia (galangal), Levisticum (lovage), Myristica (nutmeg).

Indications for aromatics

- Colic and flatulence
- Irritable bowel disease
- Congestive dyspepsia
- Catarrh and bronchial congestion

Other traditional indications for aromatics

- Sluggish digestion and metabolism
- Congestive chronic infections and inflammatory conditions

Contraindications for aromatics

The use of aromatics may be contraindicated or inappropriate in gastrooesophageal reflux.
Traditional therapeutic insights into the use of aromatics

In Chinese medicine aromatics are used for 'damp' conditions affecting the assimilative functions (represented by the Spleen in Chinese medicine). Symptoms include abdominal and thoracic congestion (sometimes associated with cough and breathlessness), loss of appetite and loose stools.

**Application**

Aromatics are best taken immediately before meals. Their impact on the digestion is often increased if taken in hot aqueous infusions.

Long-term therapy with aromatics is often well tolerated.

**VOLATILE ANTISPASMODICS**

Plant remedies traditionally used as antispasmodics

Matricaria (chamomile), Mentha (peppermint), Melissa (lemon balm), Achillea (yarrow), Nepeta cataria (catmint), Petroselinum (parsley root), Thymus spp (thyme).

**Indications for antispasmodics**

- Nervous dyspepsia
- Colic and flatulence
- Irritable bowel disease
- Gastritis

**Other traditional indications for antispasmodics**

- As components of fever management strategies
- General nervous, irritable and anxiety syndromes

**Contraindications for antispasmodics**

The use of antispasmodics may be contraindicated or inappropriate in gastric and enteric poisoning incidents.

**Traditional therapeutic insights into the use of antispasmodics**

These remedies overlap with the aromatics in their effect on the digestive tract but are more appropriate in hot and febrile conditions. However, in many cases predicting efficacy is difficult and patients may be encouraged to try a number of these or aromatic remedies to see which suits best. In all cases effects are very quick.

**Application**

Antispasmodics are best taken immediately before meals. Their impact on the digestion is often increased if taken in hot aqueous infusions.

Long-term therapy with antispasmodics is often well tolerated.

**RESINS**

Plant remedies traditionally used as resins

Calendula (marigold), Commiphora (myrrh), Ferula (asafoetida), Dorema (ammoniacum), Myrica (bayberry).

**Indications for resin-containing remedies**

- Inflammatory conditions of the mouth, throat and upper digestive tract
- Lymphadenopathies and recurrent infections

**Application**

Resins will only dissolve in alcohol so resin-rich remedies need to be taken as tinctures with as little water as possible.

Long-term therapy with resins is inadvisable.

**ANTHRAQUINONE LAXATIVES**

Plant remedies traditionally used as anthraquinone laxatives

Aloe, Cassia (senna), Rhamnus purshiana (cascara), Rhamnus frangula (frangula), Rheum (rhubarb), Rumex crispus (yellow dock).

**Indications for anthraquinone laxatives**

- Atonic constipation

**Other traditional indications for anthraquinone laxatives**

- Fluid retention
- Obesity
Contraindications for anthraquinone laxatives

The use of anthraquinone laxatives is either contraindicated or at least inappropriate in the following:

- Constipation associated with bowel irritability
- Bowel disease
- Diarrhoea

Application

Anthraquinones may be taken in laxative doses with the evening meal. Lower doses may be taken with other meals as part of a strategy to increase general bowel activity over the medium term.

Long-term therapy with anthraquinones is formally contraindicated.

Advanced phytotherapeutics

Anthraquinone laxatives may also be usefully applied in some cases (depending on other factors) of detoxifying regimes.

BITTERS

Plant remedies traditionally used as bitters

Gentiana (gentian), Centaurium (centaury), Artemisia absinthium (wormwood), Taraxacum (dandelion), Aletris (unicorn root), Marsdenia (condurango), Menyanthes (bogbean), Picrasma (quassia), Swertia (chiretta), Veronicastrum (black root).

Indications for bitters

- Poor appetite and digestion
- Liver and bile disturbances (as choleretics, see p. 190)
- Blood sugar disturbances, including the dietary management of diabetes
- Chronic gastritis and gastric ulceration
- Food intolerances and allergies
- Debilitated conditions associated with any of the above

Other traditional indications for bitters

- Fever management
- Jaundice

Contraindications for bitters

The use of bitters is either contraindicated or at least inappropriate in the following:

- Duodenal ulceration
- Conditions classed as ‘cold-dry’ in early medicine, involving for example ready shivering with dry cough and notably including some kidney diseases

Traditional therapeutic insights into the use of bitters

Bitters were universally classified as cooling in early approaches to medicine (see p.5). This insight is likely to have followed observations that administering bitters helped to contain excesses of temperature in fevers and has been associated in Chinese medicine, for example, with the view that increased digestive activity is intrinsically a cooling phenomenon. In supporting the latter, bitters were seen not only to support nourishment but to reduce the symptoms of excessive heat in some pathologies, including some headaches and migraines, skin and other inflammatory diseases and allergic or hypersensitivity conditions.

Application

Since bitters act by reflex, they do not usually have to be given in high doses. Enough to promote a strong taste of bitterness is usually sufficient. This will typically be seen if 5–10% of tinctures are bitters like Gentiana or Artemisia absinthium (wormwood).

Long-term therapy with bitters is possible in those individuals where its effect is beneficial. However, it is always valuable to work to a position where the bitters are taken only when necessary and useful.

Advanced phytotherapeutics

Bitters may also be usefully applied in some cases (depending on other factors) of:

- headaches and migraines;
- skin and other inflammatory diseases;
- allergic and hypersensitivity conditions.

PHYTOTHERAPY FOR DIGESTIVE CONDITIONS

Mouth ulcers (aphthous ulceration)

Aphthous ulceration is a common recurrent condition characterized by superficial ulceration in the mouth. Ulcers are often multiple and may recur. The cause is unknown but possible factors include emotional stress, poor immunity, imbalanced oral flora and dentures. In some women ulcers tend to follow a cyclic pattern and occur premenstrually. The presence of serious diseases such as Crohn’s disease, ulcerative colitis, coeliac or Behçet’s disease should always be excluded.
### Treatment

The approach of herbal treatment is to accelerate the healing of the ulcers and to correct any underlying imbalances. Other aspects of treatment include the minimization of stress, attention to a wholesome diet with plenty of fruit and vegetables and attention to oral hygiene.

### Case history

A female patient aged 42 had suffered from mouth ulcers almost continuously for 30 years. All her teeth had been removed when she was 15 because they were 'chalky'. She was a worrier and found it difficult to relax.

Initial treatment was as follows (based on 1 week).

- **Glycyrrhiza glabra** (high in glycyrhrizin) 1:1 20 ml
- **Echinacea angustifolia** 1:2 25 ml
- **Propolis** 1:10 25 ml
- **Valeriana officinalis** 1:2 20 ml

Total 100 ml

Dose 5 ml with water three times a day.

The following mixture was to be applied directly to the ulcers.

- **Propolis** 1:10 50 ml
- **Calendula** 1:2 50 ml

Total 100 ml

She was also advised to rinse her mouth regularly with a mixture of acidophilus yoghurt and water.

After 4 weeks she had only experienced three ulcers, all in the first week of treatment. In the following 4 weeks there was only one ulcer. One year later she was still taking the herbal treatment at a reduced frequency (one or two doses a day) and was relatively free from mouth ulcers.

Herbs which are prescribed for the treatment of mouth ulcers, and their relevant properties, are as listed above. Most of these herbs are beneficial when applied topically as well as when taken internally.

### Dyspepsia and gastrooesophageal reflux (GOR)

Approaches to the herbal treatment of both GOR and functional dyspepsia are similar, although different aspects of treatment are emphasized in each disorder and for individual cases.

Main aspects of treatment include the following.

- **Glycyrrhiza** (licorice) and mucilaginous herbs such as Ulmus (slippery elm) and Althaea (marshmallow root) to assist mucoprotection. These are best taken after meals and before bed.
- Bitter herbs at low doses can increase oesophageal sphincter tone and improve gastric emptying. However, they also increase gastric acidity and therefore should be used cautiously.
- Carminative herbs and essential oils in high doses will aggravate GOR by reducing sphincter tone but they can be indicated for functional dyspepsia. Also, in lower doses, they can improve gastrointestinal motility.
- Antiinflammatory herbs relieve symptoms and improve healing and include Filipendula (meadowsweet), Stellaria (chickweed) and Matricaria (chamomile), especially those chemotypes of Matricaria rich in bisabolol. Filipendula is also traditionally thought to reduce excess acidity and Matricaria is also spasmolytic. They are indicated in both functional dyspepsia and GOR.
Herbal approaches to system dysfunctions

- GOR and functional dyspepsia may be linked to stress, especially if associated with irritable bowel syndrome. Sedative herbs, e.g. Valeriana, and nervine tonic herbs, e.g. Scutellaria (skullcap), are indicated if this association is evident.

**Case history**

A female patient aged 58 had suffered irregularly from heartburn for 10-15 years. Over the years she had learnt to avoid alcohol, smoking, wheat, yeast and rice. She was already taking slippery elm powder and had taken antacids in the past. She sought treatment because she was experiencing frequent attacks of heartburn in the past few months. She hated licorice, so it was not included in her formula.

Treatment consisted of (based on 1 week):

<table>
<thead>
<tr>
<th>Herb</th>
<th>Dilution</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passiflora incarnata</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Filipendula ulmaria</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Stellaria media stabilized succus</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100 ml</td>
</tr>
</tbody>
</table>

Dose 5 ml three times a day.

In the 4 weeks following she experienced only one attack of heartburn and in the following 4 weeks had no problems with heartburn, despite being unwell with influenza.

**Poor upper digestive function/anorexia**

Poor upper digestive function can be a consequence of prolonged or serious illness or can occur with convalescence. Digestive function also deteriorates with age, particularly gastric acid and pancreatic output. It is also reflected in children by their failure to thrive, anaemia and susceptibility to infections. Symptoms include anorexia, a prolonged sensation of fullness or stagnation after eating, undigested food in stools, belching or flatulence, intolerance of fatty foods and nausea. However, poor upper digestive function may be largely asymptomatic in itself but may contribute to other conditions such as food intolerance or allergies, intestinal dysbiosis (abnormal bowel flora), constipation, nutrient deficiencies and migraine headaches. Herbal practitioners believe that many chronic diseases originally begin with poor digestive function and good upper digestive function is a prerequisite for a healthy digestive system.

Herbs which improve upper digestive function can be divided into five major groups.

**Simple bitters**

- Simple bitters such as *Gentiana lutea* which improve most aspects of upper digestive function.

**Aromatic digestives**

- Aromatic digestives such as *Angelica archangelica*, *Cinnamomum* (cinnamon) and *Coleus forskohlii* which improve gastric acid secretions. Coleus also improves exocrine pancreatic function.

**Pungent herbs**

- Pungent herbs such as *Zingiber* (ginger) and *Capsicum* (cayenne) which are potent stimulators of gastric acid.

**Choleretic herbs**

- Choleretic herbs such as *Berberis vulgaris* (barberry), *Silybum* (St Mary's thistle) and *Taraxacum* (dandelion root) which improve bile production by the liver.

**Cholagogue herbs**

- Cholagogue herbs such *Mentha piperita* (peppermint) which improve gallbladder function.

An example formula for improving upper digestive function is:

<table>
<thead>
<tr>
<th>Herb</th>
<th>Dilution</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentiana lutea</td>
<td>1:5</td>
<td>10 ml</td>
</tr>
<tr>
<td>Coleus forskohlii</td>
<td>1:1</td>
<td>65 ml</td>
</tr>
<tr>
<td>Zingiber officinale</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100 ml</td>
</tr>
</tbody>
</table>

Dose 20 drops (about 0.7 ml) with water 20 minutes before meals.

If there is evidence of liver weakness, e.g. previous pesticide exposure, history of hepatitis or symptoms such as nausea after rich or fatty food, the above treatment may need to be supplemented with the choleric herbs mentioned above. If the patient notices excessive irritability after using any of the above herbs, reduce the dose or delete any bitter herbs, including Berberis.

**Nausea**

Nausea is a symptom rather than a disease state. A number of herbs can be used effectively to give relief. If nausea is traceable to poor liver function, then the treatment approach outlined above should be followed. Other herbs which can provide symptomatic relief in cases of nausea include *Zingiber* (ginger), *Mentha piperita* (peppermint), *Matricaria* (chamomile), *Ballota nigra* (black horehound) and *Filipendula* (meadowsweet). If herbs are used to prevent motion sickness, they should be taken about 1 hour before travel. Ginger is particularly effective for all forms of motion sickness and also for morning sickness. Herbs should not be administered orally to a person who is vomiting.
Peptic ulcer

The herbal approach to the treatment of peptic ulcer disease should take into account all the causative and sustaining factors which are relevant to the individual patients. Rather than being concerned with inhibiting gastric acid, the herbal approach stresses the support of factors which protect the mucosa and improve the capacity of the body to heal the ulcer.

Main aspects of treatment include the following.

- Glycyrrhiza (licorice) and mucilaginous herbs to enhance mucoprotection. These are best taken before meals and, in the case of duodenal ulceration, should be taken at least half an hour before eating. Glycyrrhiza also improves pancreatic bicarbonate secretion.

- Whilst bitter herbs such as Gentiana are contraindicated in duodenal ulcers, they may be valuable in gastric ulcers because of their trophic effect on the gastric mucous membrane.

- **Hydrastis canadensis** (golden seal) is traditionally restorative to mucous membranes and also antibacterial.

- Also other antiseptic treatments such as propolis and raw crushed garlic will help to resolve *Helicobacter pylori* infection, although many ulcer patients find raw garlic difficult to take. Propolis also improves healing.

- Immune-enhancing herbs such as Echinacea will also help resolve *Helicobacter pylori* presence and improve repair mechanisms. They were traditionally used in peptic ulcer disease long before the importance of *H. pylori* was recognized.

- Gently astringent herbs will assist ulcer healing and boost mucoprotection in the vicinity of the ulcer. Good examples are Agrimonia and Filipendula (meadowsweet). Strongly astringent herbs such as *Geranium maculatum* (cranesbill) will aggravate a gastric ulcer but may be suitable for duodenal ulcer treatment.

- Antiinflammatory herbs such as Stellaria (chickweed) and bisabolol-rich Matricaria (chamomile) and vulneraries such as Calendula and Stellaria will help break the vicious cycle of ulceration and accelerate the healing process.

- Spasmolytic and carminative herbs will improve gastrointestinal motility. Carminative herbs, e.g. Foeniculum (fennel) should be administered only in low doses. Good gastrointestinal spasmodyltics include Matricaria and *Viburnum opulus* (cramp bark).

- Filipendula is considered by some herbalists to be a normalizer of the acidity of the stomach. It does appear to decrease the negative effects of acid and pepsin on the mucosa but is probably not a true antacid. This positive effect on the mucosa is paradoxical since it contains salicylates.

- Some patients with peptic ulcer disease may experience irritation from herbal treatment and one approach with more severe or chronic cases is to start with a low dose and gradually increase over several weeks.

**Example treatments**

**Gastric ulcer**

<table>
<thead>
<tr>
<th>Herb</th>
<th>Strength</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foeniculum vulgare</td>
<td>1:2</td>
<td>3 ml</td>
</tr>
<tr>
<td>Filipendula ulmaria</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Glycyrrhiza glabra (high in glycyrrhizin)</td>
<td>1:1</td>
<td>15 ml</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
<td>20 ml</td>
</tr>
<tr>
<td>Gentiana lutea</td>
<td>1:5</td>
<td>2 ml</td>
</tr>
<tr>
<td>Echinacea angustifolia</td>
<td>1:2</td>
<td>20 ml</td>
</tr>
<tr>
<td>Calendula officinalis</td>
<td>1:2</td>
<td>15 ml</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100 ml</strong></td>
</tr>
</tbody>
</table>

Dose 5 ml with water three times a day before meals. Also slippery elm powder, one heaped teaspoon with water before meals, and one Hydrastis 500 mg tablet after meals. (Hydrastis contains alkaloids and is incompatible with the tannins in Filipendula.) If irritation occurs, reduce the dose of liquid herbs to half and stop the Hydrastis.

**Duodenal ulcer**

<table>
<thead>
<tr>
<th>Herb</th>
<th>Strength</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filipendula ulmaria</td>
<td>1:2</td>
<td>20 ml</td>
</tr>
<tr>
<td>Glycyrrhiza glabra</td>
<td>1:1</td>
<td>15 ml</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Propolis</td>
<td>1:10</td>
<td>15 ml</td>
</tr>
<tr>
<td>Echinacea angustifolia</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100 ml</strong></td>
</tr>
</tbody>
</table>

Dose 5 ml with water three times a day half hour before meals. Also slippery elm powder and Hydrastis tablets as above.

**Food intolerance and allergies**

Food intolerance can have a number of causes such as enzyme defects (e.g. alactasia), pharmacological activity (e.g. salicylates) and immunological reactions (allergy, coeliac disease). There are also a number of
Herbal approaches to system dysfunctions

Herbal approaches to system dysfunctions

less well-defined and less specific, often idiosyncratic, reactions. Food intolerance can follow hepatitis or gastrointestinal infection. In these instances the reaction to some or many foods can continue long after the actual infection has passed.

In the case of immunological reactions, which represent true food allergy, the best approach to treatment is to avoid the offending foods, if they can be identified, and if exclusion is not impractical. In other instances of food intolerance, herbal treatment may prove beneficial by correcting any physiological defects or deficiencies which are contributing to the reaction to foods and by dampening any underlying gastrointestinal inflammation.

The herbal approach to the treatment of food intolerance or allergy is as follows.

- Bitter, aromatic, pungent, choleretic and cholagogue herbs to improve upper digestive function.
- Hepatotrophorestoratives and stimulants of hepatic metabolism, such as Silybum and Schisandra, to improve hepatic screening and detoxification.
- Depurative and lymphatic herbs, e.g. Arctium (burdock) and Calendula, to assist detoxification mechanisms.
- Herbs with healing and protective effects on the gut wall such as Filipendula (meadowsweet), Calendula, Matricaria (chamomile) and Althaea (marshmallow) root.
- Immune-enhancing herbs such as Echinacea which enhances phagocytic activity. Picrorrhiza is both bitter and immune enhancing.
- Hydrastis (golden seal) as a restorative to the mucous membranes of the gut wall and a potential modifier of gut flora. Hydrastis is also bitter.
- Other treatments to restore normal gut flora. This is covered in detail on p.165. See also antimicrobial herbs listed on p.140.
- Antiallergic herbs such as Albizzia and Scutellaria baicalensis (Baical skullcap) and antiinflammatory herbs such as Matricaria.

Appropriate herbs should be selected from the above treatment approach on the basis of the individual case.

Case history

A female patient aged 35 had been overseas and developed an acute gastrointestinal infection with pain and diarrhoea. The infection passed but on returning home she experienced bloating and diarrhoea often after eating. Stool culture did not demonstrate the presence of an infection. Symptoms could be controlled by restricting her diet to a very simple one, e.g. rice and vegetables.

Treatment consisted of:

<table>
<thead>
<tr>
<th>Herb</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinacea angustifolia</td>
<td>1:2</td>
</tr>
<tr>
<td>Picrorrhiza kurroa</td>
<td>1:2</td>
</tr>
<tr>
<td>Silybum marianum</td>
<td>1:2</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
</tr>
<tr>
<td>Filipendula ulmaria</td>
<td>1:2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Dose 5 ml with water three times a day before meals.

Golden seal tablets 500 mg, one tablet with each meal. After 4 weeks of treatment, symptoms had improved and she could often be more adventurous with her diet without causing problems. However, symptoms were still occurring on many days.

During the next 4 weeks her condition continued to improve with herbal treatment. After another 4 weeks she could eat normally and the herbs were discontinued without adverse effect.

Gastrointestinal infections and diarrhoea

The most common causes of acute diarrhoea are infectious agents. Acute diarrhoea may also be caused by drugs or toxins. Chronic diarrhoea is also most likely to be caused by infectious agents. However, other common causes include inflammatory bowel diseases, malabsorption, irritable bowel syndrome (idiopathic diarrhoea), medications and food additives. In all cases the source of the diarrhoea should be ascertained and appropriate treatment should then follow.

Acute gastrointestinal diarrhoea with vomiting is generally not suited to herbal therapy. This is because the patient will invariably vomit back the herbal treatment and may consequently develop an aversion to taking herbs.

Acute infectious diarrhoea in the absence of vomiting can be approached in the following way.

- Boost immunity with immune-enhancing herbs, particularly Echinacea and Picrorrhiza.
- Control fever with diaphoretic herbs such as Mentha piperita (peppermint) and Achillea (yarrow).
- If the infection does not involve a virus, Hydrastis (golden seal) or Berberis vulgaris (barberry) is indicated because of the antimicrobial activity of the berberine they contain. Berberine also inhibits the activity of enterotoxins. Citrus seed extract (Citrus spp) is also a highly active antimicrobial.
If cytotoxins or mucosal invasion are part of the pathogenic process, antiinflammatory herbs such as Matricaria (chamomile) and mucilage-containing herbs, e.g. Ulmus rubra (slippery elm) are indicated.

- Tannin-containing herbs, e.g. Geranium maculatum (cranesbill), which act as astringents will also gently control diarrhoea without risk of aggravating the infection by reducing intestinal motility. They also reduce mucosal damage.

- Antiprotozoal agents include propolis, Artemisia annua, berberine-containing herbs and Euphorbia. Garlic can also be helpful as a gastrointestinal antiseptic.

- Normal conservative measures such as adequate fluid and electrolyte intake should also be implemented.

Chronic infectious diarrhoea is treated in a similar manner to acute infectious diarrhoea. However, particular emphasis should also be given to factors involved in host resistance.

- Gastrointestinal antiseptics, (e.g. Citrus seed, Hydrastis) especially when used (but not concurrently) with agents which encourage growth of normal flora (see Treatment of autoimmune diseases on p.144), will help to restore the protective activity of intestinal flora.

- Herbs to improve gastric acidity to prevent reinfec- tion may also need emphasis. These include Coleus, Angelica, Zingiber (ginger), Capsicum (cayenne) and bitters such as Gentiana.

Case history

A female patient aged 35 presented with chronic infection with the protozoan Giardia which had persisted for more than 3 months. She was prescribed the following treatment (based on 1 week).

<table>
<thead>
<tr>
<th>Herb</th>
<th>Ratio</th>
<th>Total Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinacea angustifolia</td>
<td>1:2</td>
<td>35 ml</td>
</tr>
<tr>
<td>Picrorrhiza kurooa</td>
<td>1:2</td>
<td>10 ml</td>
</tr>
<tr>
<td>Angelica archangelica</td>
<td>1:2</td>
<td>15 ml</td>
</tr>
<tr>
<td>Propolis</td>
<td>1:10</td>
<td>20 ml</td>
</tr>
<tr>
<td>Zingiber officinalis</td>
<td>1:2</td>
<td>5 ml</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
<td>15 ml</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100 ml</td>
</tr>
</tbody>
</table>

Dose 5 ml with water three times a day.

Hydrastis (golden seal) 500 mg tablets at four per day were also prescribed and regular intake of a Lactobacillus culture at separate times was recommended.

After 4 weeks, symptoms were about the same. There was even a 1-week period when the patient felt that the herbs were aggravating her condition. After another 4 weeks there was considerable improvement and the condition was resolved by a further 8 weeks' treatment. Note that Picrorrhiza in the formula doubled as a bitter to increase gastric acid and as an immune-enhancing agent.

**Diverticular disease**

The main aim of herbal treatment in uncomplicated diverticular disease is to reduce stagnation and further degeneration of the bowel wall. Aspects of treatment include the following:

- Appropriate dietary measures to increase fibre intake (but excluding seeds and nuts) and supplemen- tation with mucilaginous herbs such as Ulmus (slippery elm). This will also help to maintain healthy bowel flora.

- Gastrointestinal spasmolytics to decrease intra- colonic pressure, e.g. Viburnum opulus (cramp bark), Dioscorea (wild yam) and Matricaria (chamomile).

- Herbs to improve connective tissue strength such as antioxidant herbs containing flavonoids oligomeric procyanidins (OPC) e.g. Vitis (grape seed extract) and Crataegus (hawthorn). Polygonum multiflorum is also thought to improve connective tissue and is also a gentle laxative.

- Gentle treatment of any associated constipation (see below).

Painful or symptomatic diverticular disease can also occur in the absence of diverticulitis. In medical thinking this is considered to be a variant of irritable bowel syndrome. However, it could result from a low-grade 'diverticulosis'. Depending on the assessment of the patient, this problem should either be treated as irritable bowel syndrome or the treatment approach described below to prevent recurrence of acute diverticulitis should otherwise be followed.

Acute diverticulitis usually requires hospitaliza- tion. Herbal treatment is more suited to prevention of its recurrence. As well as incorporating the aspects of treatment of uncomplicated diverticular disease described above, the approach to prevention of acute diverticulitis should additionally include:

- immune-enhancing herbs such as Echinacea to reduce pathogenic bacteria;
- gastrointestinal antiseptic herbs (see Gastrointestinal infections above);
- antinflammatory gastrointestinal herbs such as Filipendula (meadowsweet) and Matricaria (chamomile).
Herbal approaches to system dysfunctions

Case history
A male patient aged 72 suffered an attack of acute diverticulitis and was concerned to prevent another episode. Treatment consisted of the following prescription (based on 1 week).

<table>
<thead>
<tr>
<th>Herbal Medicine</th>
<th>Ratio</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinacea angustifolia</td>
<td>1:2</td>
<td>25 ml</td>
</tr>
<tr>
<td>Hydrastis canadensis</td>
<td>1:3</td>
<td>20 ml</td>
</tr>
<tr>
<td>Viburnum opulus</td>
<td>1:2</td>
<td>20 ml</td>
</tr>
<tr>
<td>Matricaria chamomilla</td>
<td>1:2</td>
<td>20 ml</td>
</tr>
<tr>
<td>Propolis</td>
<td>1:10</td>
<td>15 ml</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100 ml</strong></td>
</tr>
</tbody>
</table>

Dose 5 ml with water three times a day.
Slippery elm powder, one heaped teaspoon with water before each meal, was also prescribed.

The patient was also advised to have more fibre in his diet, particularly more fruit. Fresh garlic, one to two cloves a day, was also recommended for 3 days of every week. After 6 months the herbal treatment was discontinued but the fresh garlic (for 1-2 days a week), slippery elm and dietary changes were still observed.

Several years later, the patient has not experienced any recurrence of acute diverticulitis.

Constipation

Constipation is medically defined as a bowel frequency of less than three times a week or the need to strain more than 25% of the time during defaecation. However, it is probably less than optimum for health to defaecate less than once a day. Herbalists certainly believe that regular bowel movements are necessary for the maintenance of good health. Constipation may be associated with diseases such as hypothyroidism and Parkinson’s disease and these should always be excluded.

Use of the well-known and much maligned anthraquinone-containing herbal laxatives is widespread. On balance, the evidence is that these herbs are safe and effective when used in the short term. However, they are best used as a last resort since their effect is only symptomatic. Their tendency to cause wind and griping can aggravate the pain associated with irritable bowel syndrome and they are not at all suitable for constipation associated with bowel tension, spasm or irritability (see below). Also, the anthraquinone laxatives may become habit forming.

The herbal treatment of constipation can be approached in the following way.

- Increase stool bulk through diet and with bulking herbs such as ulmus (slippery elm) and Plantago ovata (ispaghula).
- Improve motor function with gastrointestinal spasmyotics such as Matricaria (chamomile) or Viburnum opulus (cramp bark).
- Improve gastrointestinal lubrication. Linseeds are particularly suitable because of their oil and mucilage content.
- Judicious use of laxative herbs beginning with gentle agents such as Juglans cinerea (butternut), Rumex (yellow dock) Glycyrrhiza (licorice) and Rehmannia. Otherwise a minimum quantity of Cassia (senna) or Rhamnus purshiana (cascara) can be introduced.

Irritable bowel syndrome

Irritable bowel syndrome (IBS) can be a difficult disorder to comprehend and treat. One reason for this is that the diagnosis is only conclusively arrived at after exclusion of other known disorders. Hence, it is likely that IBS includes a number of different disorders lumped together under the one label. This can be seen in the fact that patients with IBS have at least three distinct symptom patterns. A more definitive approach towards diagnosis and classification will lead to a better understanding and management. For example, it is unreasonable to assume that IBS characterized by diarrhoea would necessarily respond to the same treatment as IBS in which constipation predominates, yet many clinical trials make no attempt to evaluate therapy in terms of initial symptoms.

IBS is the most common but yet least understood gastrointestinal disorder. There are three basic types:

- Functional diarrhoea, often without pain
- Chronic abdominal pain and constipation (spastic colitis)
- Abdominal pain with disturbed and variable bowel habit, i.e. constipation alternating with diarrhoea

The dated term ‘mucous colitis’ refers to the excessive amount of mucus which can be passed with stools.

The exact nature of the herbal treatment should depend on the factors identified in the individual case.

- An appropriate exclusion diet should be conducted.
- Spasmolytic herbs including Matricaria (chamomile), Viburnum opulus (cramp bark), Mentha
Practical clinical guides

piperita (peppermint). Matricaria is also a mild sedative.

- Sedative and nervine tonic herbs, particularly Scutellaria lateriflora (skullcap) and Valeriana (valerian).

- Hepatorestorative and choleric herbs to improve liver function such as Silybum (St Mary's thistle), chionanthus (fringe tree) and Schisandra.

- Mucilage-containing herbs such as Ulmus (slippery elm), especially if there is constipation.

- Gastrointestinal antiseptics to restore normal bowel flora such as Hydrastis (golden seal), propolis and citrus seed extract. IBS patients may be intolerant of garlic.

- The presence of mucus implies irritation, and gastrointestinal antiinflammatories such as Filipendula (meadowsweet) and Matricaria (chamomile) are indicated.

- Constipation should be treated with only gentle herbs such as Rumex crispus (yellow dock), Juglans cinerea (butternut) and Taraxacum (dandelion root).

Case history

A female patient aged 42 complained of chronic episodes of discomfort and distension in the right lower abdomen. This could be quite sharp at times and was associated with a feeling of malaise. She was intolerant of fatty foods and had what she described as a 'sluggish bowel' although her motions were always 'loose'. Past medical history revealed that she had lived on the Solomon Islands for an extended period during which time she had amoebic dysentery and malaria. A number of recent medical tests, including colonoscopy, could not find any abnormalities. She also had a history of heart damage of undefined origin. For this reason Crataegus (hawthorn) was included in her treatment (the Chinese use Crataegus as a digestive herb).

The following treatment was prescribed.

- Crataegus spp leaves 1:2 20 ml
- Filipendula ulmaria 1:2 20 ml
- Chionanthus virginicus 1:2 15 ml
- Silybum marianum 1:1 15 ml
- Matricaria chamomilla 1:2 20 ml
- Viburnum opulus 1:2 20 ml

Total 110 ml

Dose 5 ml with water three times daily. Slippery elm, one heaped teaspoon with water three times a day, was also recommended.

After 4 weeks she reported a stunning transformation. In the whole month she had only experienced one bad day. She was feeling very well, eating better and had more energy. The patient will remain on her herbal treatment for some time. This was a patient who had spent many years and thousands of dollars on conventional medical treatment and yet had remained unwell.

Haemorrhoids

Haemorrhoids are aggravated by pelvic congestion (e.g. constipation and pregnancy) and prostatic enlargement. Some degree of loss of elasticity of the anal sphincter may play a role. Lifting heavy weights may aggravate the condition. Treatment could include the following.

- Increase dietary fibre, both soluble and insoluble.

- Mucilage-containing herbs such as Ulmus (slippery elm) and psyllium to keep the stool soft.

- Any associated constipation should be treated (see above).

- Oral treatment using herbs to improve venous and connective tissue tone. These include Aesculus (horsechestnut), Ruscus (butcher's broom) and Polygonum multiflorum. Flavonoid-containing herbs, e.g. Crataegus, also have this property. Melilotus (sweet clover) helps to relieve tissue congestion.

- Topical treatment with healing and astringent herbs such as Hamamelis (witchhazel), Symphytum (comfrey) and Calendula. Aesculus also works well topically, especially in gel formulations, but should not be applied if the piles are bleeding.

- If liver congestion exists, which will exacerbate pelvic congestion, treatment with choleretic and hepatoprotective herbs should be applied.

Case history

A male patient aged 35 had suffered from haemorrhoids for 8 years. He had been treated with rubber ligation but was still suffering problems such as irritation and occasional bleeding. He was not suffering from constipation but felt tense in the lower abdomen and was generally an anxious person. Other symptoms included indigestion, abdominal bloating and reflux. Treatment consisted of (based on 1 week):
Herbal approaches to system dysfunctions • 181

<table>
<thead>
<tr>
<th>Medicinal Plant</th>
<th>Dose</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Artemisia absinthium</em></td>
<td>1:5</td>
<td>10 ml Dose 5 ml with water three times daily</td>
</tr>
<tr>
<td><em>Aesculus hippocastanum</em></td>
<td>1:2</td>
<td>25ml Slippery elm powder, one heaped teaspoon twice a day was also prescribed, together with comfrey ointment.</td>
</tr>
<tr>
<td><em>Melilotus officinalis</em></td>
<td>1:2</td>
<td>20ml Over the course of the next 16 weeks, the condition improved and he was free of any symptoms related to the haemorrhoids. He also reported feeling more relaxed.</td>
</tr>
<tr>
<td><em>Ruscus aculeatus</em></td>
<td>1:2</td>
<td>25ml</td>
</tr>
<tr>
<td><em>Valeriana officinalis</em></td>
<td>1:2</td>
<td>20ml</td>
</tr>
</tbody>
</table>

References

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