

Traditional Chinese herbal medicine

Traditional Chinese medicine is one of the most popular complementary health care choices in the UK. In a third article in a series on traditional systems of medicine, Lida Teng, Debbie Shaw and Joanne Barnes give an overview of the theories involved and discuss safety issues

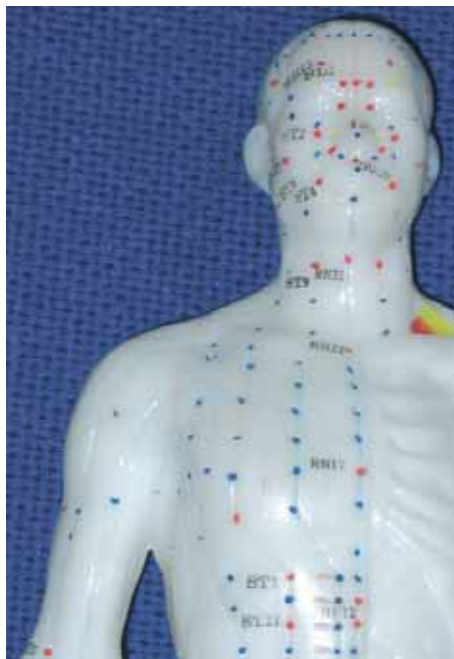
Traditional Chinese medicine (TCM) is a holistic form of medicine with a 5,000-year history. It comprises traditional Chinese herbal medicine (TCHM), acupuncture, acupressure, massage (tui na), energy therapy (qi gong) and other practices. The core concepts of TCM have influenced the development of other oriental therapeutic systems, such as Kampo (see Panel, p363) and traditional Korean medicine. TCM was introduced to western countries in the 1970s after US president Richard Nixon officially visited China.

Basic theory of TCM

TCM concerns harmony of the body, differentiation of symptoms and signs, and holistic treatments. The full theoretical system was established 2,300 years ago, when philosophical theories of yin-yang and the five elements were applied.

Yin-yang theory focuses on the opposite characteristics of different substances and phenomena. Yin represents negative, passive and internal features, while yang represents positive, active and external features. The yin-yang symbol (also called tai chi or tai ji — see Figure 1, p362), interprets the relationship between the two: yin (the black part) contains the seed of yang (the white spot), and vice versa. All phenomena in nature have yin and yang features. They are opposite but interdependent and can alternate through a cyclical movement. If yang declines, yin will rise, and vice versa.

In TCM physiology, the stomach is a yang organ because it is in contact with the external environment through the gastrointestinal tract and has yang functions, such as absorbing foods and extracting nutrients (“food essence”) to produce “vital energy” (qi). Yin organs, such as the heart, liver, spleen, kidneys and lungs, are less dynamic and store energy. Symptoms are also categorised as yin (cold, slow, wet, chronic) or yang (hot, rapid, dry, acute). Yin and yang symptoms are transformable; at the early stage of illness, cold symptoms (yin) can transfer into heat in the body (yang). In treatment, “cold” conditions



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are generally treated with herbs having “hot” properties.

The five-element theory further explains the Chinese medical system, using wood, fire, earth, metal and water to describe different substances and phenomena of similar natures (see Table). For example, in TCM, the function of the spleen is to transform food essence to produce qi and blood. These are similar to the nature of earth — growing, planting and generating — so the spleen is considered to belong to the earth element. The kidneys, ears, salty taste and fear are associated with water (see Table). Thus, chronic tinnitus could be a symptom of kidney deficiency, which could cause anxiety and fear, possibly associated with a salty diet.

The five elements have complex relationships (see Figure 2, p363). An excess or deficiency of any one element is believed to disrupt balance and cause disease. Medical language used in TCM needs to be distinguished from that of conventional western

medicine, particularly in describing organ function. In TCM, each organ is a holistic complex energy system, (eg, the heart is responsible for the mind and blood circulation, and has a sense of happiness, which does not correspond with western medical thinking). These differences are probably due to the fact that dissecting the human body was prohibited in ancient China.

Another essential concept in TCM is that of vital substances: qi, blood, essence (jing), body fluids and mind. These constitute the human body and maintain the functions of the organs. Deficiency in any of the substances will result in an imbalance of yin-yang and cause disease. Other important principles in the TCM framework include the theories of viscera and meridians (longitudinal pathways across the body, along which acupuncture points are distributed) and the identification of patterns.

Diagnostics and therapeutics Observation (wàng), listening and smelling (wén), interrogation (wèn), and palpation and pulse taking (qiè) are the four principal diagnostic techniques used in TCM. A practitioner will observe the patient's face and tongue, ask for details of symptoms, medical history and life style, listen to the patient's voice, palpate the skin and abdomen and feel his or her pulse.

The term “pattern” is used in TCM to describe symptoms and classify disease. Particular patterns are looked for among overall symptoms and the corresponding treatment applied. Treatments are highly individualised, and may include use of TCHMs as well as physical therapies such as acupuncture, acupressure and massage. One prescription could be used for several health problems and similar health problems are treated differently if they are not in the same TCM pattern. Follow-up consultations with prescription changes are common.

Materia medica of TCHM

In China, more than 5,000 species of animals and plants, plus minerals, are used in TCHM. In total, 538 Chinese crude “herbal” medicines were included in the 2005 Chinese Pharmacopoeia. Most are plant parts but ani-

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Table: Examples of TCM terms classified by five elements

Element	Yin organ	Yang organ	Sense organ	Tastes	Emotions	Climates
Wood	Liver	Gall bladder	Eyes	Sour	Anger	Wind
Fire	Heart	Small intestine	Tongue	Bitter	Joy	Heat
Earth	Spleen	Stomach	Mouth	Sweet	Pensiveness	Dampness
Metal	Lungs	Large intestine	Nose	Pungent	Sadness	Dryness
Water	Kidneys	Bladder	Ears	Salty	Fear	Cold

mal products make up 9.5 per cent and minerals constitute 4.5 per cent.

Chinese herbal medicines are prescribed by their Chinese common names and different herbal species can be used under one name. For example, Mu Tong, a Chinese herb for promoting diuresis, includes various plant species: *Aristolochia manshuriensis*, *Clematis armandi*, *C montana*, *Akebia quinata* and *A trifoliata*.

The number of herbal ingredients in a prescription can vary from one to more than 15. Herbs have different functions within a formula. The principal herbs target the main symptoms and associate herbs assist the function of the principal herbs and target other symptoms. Next are adjuvant herbs to strengthen the functions of the principal herb(s) and reduce toxicity, and last is the messenger herb which guides the function of all the ingredient herbs into the right pattern and harmonises the function of the formula.

Chinese herbal formulae are available as mixtures of crude herbs for internal use as a decoction, and Chinese patent medicines (CPMs), which are finished or formulated products (eg, capsules) made from crude herbs. Some modern CPMs combine herbal medicines with pharmaceutical drugs to improve efficacy and reduce the possibility of side effects. In the UK, some of these combination products are supplied by TCHM shops as herbal medicines and this has become an important quality and safety issue.

Supply of TCHM in the UK

In the UK, unlike in China, unlicensed herbal products containing pharmaceutical drugs are prohibited. It has been estimated that there are 400 to 500 Chinese herbal species on the UK market and around 20 main TCM suppliers in the UK. Herbal formulae are usually supplied after consultation with a practitioner, but CPMs and herbs can be widely purchased over the counter through TCM clinics, high street TCM retailers, Chinese supermarkets, mail order and the internet. CPMs are also available in some conventional pharmacies in Chinatown in London.

UK regulatory framework for TCHM

The regulatory framework for TCHM includes the Medicines Act 1968 and the EU Directive for Traditional Herbal Medicinal Products (2004/24/EC). The EU directive was implemented in the UK in November 2005. It provides for authorisation of herbal medicines by traditional-use registration, which requires manufacturers to demonstrate product quality (through compliance with the principles of good manufacturing practice), safety (through reviewing bibliographic data) and efficacy (by providing evidence of at

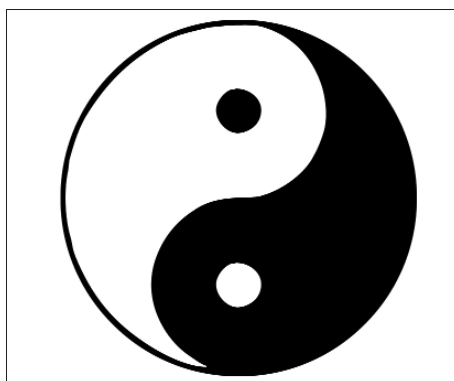


Figure 1: Yin-yang symbol

least 30 years' traditional medicinal use, which includes at least 15 years in the EC). Manufacturers of products registered under the directive must also comply with regulatory provisions on pharmacovigilance according to Directive 2001/83/EC on medicinal products for human use. For unlicensed herbal medicines on the market before the new directive was announced, there are transitional arrangements giving manufacturers until April 2011 to meet the requirements.

There is currently no statutory regulation of herbal practitioners in the UK, although proposals for this are under consultation. Although many TCM practitioners have undertaken training in the UK or China, no formal qualifications are required to practise TCHM. Several professional organisations exist (eg, the Register of Chinese Herbal Medicine and the Association of Traditional Chinese Medicine), but membership is not compulsory and requirements (eg, English language proficiency) for membership differ.

Efficacy of TCHM

Obtaining scientific evidence for TCM theory is complicated because it is based on abstract philosophy. In China, the reputation of TCHM as a therapeutic option remains strong, possibly due to its history of use and the understanding of its philosophy. In western countries, there is generally uncertainty about its efficacy. In the UK, a House of Lords report classified TCHM as being a traditionally established health care system with a philosophical background, but as having insufficient scientific evidence of efficacy.¹

Scientific evidence for TCHM is generally achieved through assessing the efficacy of specific herbs or formulae. For example, the efficacy of a standardised herbal formula for atopic dermatitis has been assessed in several double-blind, placebo controlled trials.²⁻⁴ One randomised, double-blind, placebo-controlled trial involving 116 patients with irritable bowel syndrome assessed both individualised TCHM treatment (reflecting how TCHM is prescribed in practice) and standard prepared TCHM products. Patients' bowel symptoms scale scores improved significantly in both TCHM groups, compared with placebo ($P=0.001$), but only the individualised TCHMs group still had improvements at 14

weeks.⁵ However, it is beyond the scope of this article to review all clinical trials for TCHMs.

A review of randomised controlled trials (RCTs) of TCHMs shows that most trials have been conducted in China and published in Chinese, and that their methodological quality does not meet European criteria.⁶ To date, the Cochrane Library has published nine systematic reviews of clinical trials of Chinese herbal medicine or medicinal herbs for atopic eczema, schizophrenia, diabetes, chemotherapy side effects, acute bronchitis, acute pancreatitis, hepatitis B virus infection, chronic hepatitis and influenza. These provide limited evidence of efficacy for TCHM: conclusions of these reviews are generally that there is a lack of high-quality RCTs and that rigorous studies are needed. Eighteen protocols for new systematic reviews of clinical trials of Chinese herbal medicines have been published in the Cochrane database, including herbs or formulae for cancer and gynaecological and digestive problems.

Safety

The constituent chemical compounds of Chinese medicinal herbs are diverse. The absence of rigorous toxicological information for many herbs does not necessarily indicate safety. Toxic herbs used in TCHM are traditionally classed as slightly toxic, toxic, extremely toxic and deadly toxic, based on the experiences of ancient Chinese. For example, croton seed (Ba Dou) is classified as extremely toxic and aconite root (Fu Zhi) as toxic. Dosage limitations have been documented for each herb.

Some crude herbs are processed to reduce toxicity. For example, Jiang Ban Xia is a traditional processed product of raw pinellia tuber (Ban Xia), and is boiled with gingers and alum for internal use. Raw pinellia tuber is believed to be toxic and should only be used topically. Tests have demonstrated that the processed pinellia tuber is less toxic than unprocessed tuber.⁷

Herb-herb interactions are also used to reduce toxicity, to increase potency or to modify properties of herbs in a formula. There are seven basic types of interactions (single use, mutual reinforcement, mutual assistance, mutual detoxication, mutual restraint, mutual inhibition and mutual incompatibility) so it is important to choose the correct herb combination. In addition, there are 18 incompatible herbs and 19 antagonistic herbs.

Awareness of safety issues concerning specific herbs increased following the inadvertent misuse of toxic *Aristolochia* species by a slimming clinic in Belgium. There were over 100 cases of renal failure in Belgium and at least four cases were identified in the UK. Furthermore, a five-year toxicity study on traditional medicines identified 21 cases of liver problems associated with TCHMs, but no single hepatotoxic herb has been identified.⁸ In addition to intrinsic toxic effects of some TCHMs, there is a potential for interac-

The Chinese Medicine Advisory Service provides information for health care professionals on the use and safety of Chinese medicine. (Tel: 0207 771 5157; e-mail: chimas@gstt.nhs.uk)

tions between TCHMs and other medicines, although this has been poorly investigated. However, not all interactions are clinically relevant, and some may even be therapeutically useful.

While TCM theory recognises the potential for adverse effects, including herb-herb interactions, traditional descriptions and information on herbal toxicology are largely inadequate from a western scientific perspective. At the same time, there is a lack of reliable information for most herbs on other aspects, including dosage regimens, pharmacokinetics, adverse effects, interactions and effects in special patient groups. Some data are available in primary literature, but pharmacists are likely to require summarised information provided in a familiar format.

Another issue is the use of animal material in TCHM. This carries a latent risk of various infectious diseases passing from animals to humans. Some animal products used in



Figure 2: The relationship between the five elements

TCHM, such as tiger bone and bear gall, are listed by the Convention on International Trade in Endangered Species (CITES) and despite efforts to stop the practice, some endangered species are still used and included in TCHM textbooks.

Quality Many of the safety problems with TCHMs concern poor-quality products, including contamination with heavy metals, adulteration with prescription drugs, and quantitative variations in constituents.⁹ For example, in the UK, the CPM Fufang Luhui Jiaonang was found to contain 11.7 per cent mercury and, despite attempts to withdraw this product, it is still being sold. Other adulterant drugs include dexamethasone and fenfluramine.

A phytochemical study of 12 paeoniae samples collected in London, showed the content of paeoniflorin varied from 0.01–4.57 per cent.¹⁰ The legitimate substitution of Chinese medicinal materials under a given Chinese name brings another difficulty in quality control. For example, the species *Aristolochia debilis*, *Saussurea lappa* and *Vladimiria souliei* can all be supplied under the name “Muxiang”. The latter two herbs are relatively safe but *Aristolochia debilis* contains toxic aristolochic acids.

Chinese patent medicines with the same formula name can also vary in ingredients when produced by different manufacturers. For example, the number of labelled ingredients in each of the eight CPMs all named “Gui Pi” was found to vary between two and 13.¹¹

Other issues Other issues relevant to safety include the behaviours and practices of TCHM practitioners and users. It is common practice in TCHM to change herbal prescriptions as frequently as every few days. TCHM practitioners consider some adverse effects (eg, diarrhoea) to be part of the normal response to treatment. Frequent consultations are useful in identifying acute adverse effects,

and prescriptions can be modified to reduce these. However, adverse reactions that develop only with chronic use, or that have a delayed onset may not be easily identified.

Pharmacovigilance practices for herbal medicines are still developing. Suspected adverse drug reactions (ADRs) associated with unlicensed herbal medicines have been reportable using yellow cards since 1996. Recognised reporter groups now include doctors, pharmacists, nurses, midwives and health visitors and, recently, patients but not herbal medicine practitioners. Some practitioner groups, for example the Register of Chinese Herbal Medicine, have systems to collect reports of ADRs from their members.

Pharmacists receive information on safety concerns with TCHMs and other herbal medicines in *Current Problems in Pharmacovigilance*. Further information is available in *Herbal Safety News*. Despite these initiatives, important safety and quality problems with TCHMs continue and pharmacists should be vigilant to the possibility of their patients experiencing ADRs associated with these products. At present, the distribution and use of TCHMs goes beyond formal surveillance systems; this situation is likely to continue until there is regulation of herbal practitioners and until the transition period for the Directive 2004/24/EC ends.

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Kampo

Kampo is derived from two Japanese words “kan” and “hou”, which mean “Chinese” and “method”, respectively. It is a traditional Japanese system of medicine derived from ancient Chinese medicine 1,500 years ago and merged with indigenous Japanese practices. It shares common concepts with TCM, such as holistic diagnostic pattern, the formulations prescribed and the approach to prescribing. However, the practice of kampo has been revised by Japanese practitioners over hundreds of years. For example, kampo uses abdominal palpation as a key diagnostic technique, while TCM considers pulse reading to be principal. In addition, herbal species, ingredients of products and the combination of herbs in a kampo prescription can differ from a TCHM prescription under the same name. Over the past two decades, practices of kampo have changed from individualised syndrome and pattern prescribing to generalised disease prescribing, similar to methods used in Western medicine.

Manufactured herbal products are commonly prescribed by kampo practitioners or even conventional doctors in Japan (in contrast, customised herbal decoctions retain their popularity in TCHM). Around 210 kampo formulae were recognised as over-the-counter medicines in Japan and about 165 crude herbal medicines, including animal products, were recorded in Japanese Pharmacopoeia XIV. In the UK, kampo is subject to the same regulations as TCHMs, but kampo products are not as popular. To date, no safety alert associated with quality of kampo medicines has been listed by *Herbal Safety News* but, like other herbal medicines, the efficacy and safety of kampo require further investigation. The extent of sales and practices of kampo in the UK are unknown.