TRADITIONAL CHINESE MEDICINE

by Jin-Ming Kong, Kok-Siang Tan, Ngoh-Khang Goh & Lian-Sai Chia

Introduction

“Traditional Chinese Medicine (TCM),” or “Traditional Oriental Medicine,” or simply “Chinese Medicine,” has been used in China for thousands of years. The oldest Chinese herbal encyclopedia, Shen-Nong-Ben-Cao-Jing (“The Herbal Classic of the Divine Plowman”) written in about 2700 BC, records the treatment of various diseases using TCM. Its theoretical system is based on the belief that the body will fight against and recover from illnesses when the body is unbalanced in terms of “Yin and Yang,” the “Five Elements” and “Meridians” (Channels and Collaterals). TCM differs from Western medicine not only in its specific diagnostic techniques and therapeutic principles, but also in its interpretation of both normal physiological functions and pathological changes in the human body.

TCM utilizes the following techniques or healing modalities to achieve the desired balance of Yin and Yang as well as Qi, blood and bodily fluids:

Acupuncture: The placement of hair-thin, stainless steel needles into the skin at certain acupressure points along invisible channels called meridians through which the Qi is believed to flow.

Moxibustion: Burning leaves of the Chinese mugwort near meridians related to the person’s illness or in areas of the body thought to have too little Qi.

Cupping: The creation of suction above the part of the body requiring treatment by means of a vacuum created by warming air inside a glass jar and placing it on the treatment area.

Massage: The pressing by hand of acupressure points to locate and adjust Qi.

Herbs: The use of various plants or plant parts in their natural state (without adding any chemicals) as medication for aches, pains and illness.

Why Are More People Turning Towards Traditional Medicine?

Plants have been used as medicine for millennia. The important role of traditional medicine [called TCM in China or Complementary and Alternative Medicine (CAM) in Western countries] and its profound influence on the healthcare system is well recognized in China, and in the Chinese communities worldwide.

It has been confirmed by the World Health Organization (WHO) that herbal medicines serve the health needs of about 80% of the world’s population, especially for millions of people in the vast rural areas of developing countries. Meanwhile, consumers in developed
countries are becoming disillusioned with modern healthcare and are seeking alternatives.

The following are some examples that show the widespread use of traditional medicine in many developing countries as well as its increasing use in developed countries.

In Africa, as is often stated in government reports, the majority of people continue to use traditional medicine to meet their primary healthcare needs.1

According to the WHO’s reports,2 in many Asian countries traditional medicine continues to be widely used, even though allopathic medicine is often readily available. In Japan, 60% to 70% of allopathic doctors prescribe kampo medicines for their patients. In Malaysia, traditional forms of Malay, Chinese and Indian medicine are used extensively. Likewise, in Latin America, 71% of the population in Chile and 40% of the population in Colombia have used traditional medicine.

For China with 1.3 billion people, TCM accounts for around 40% of all healthcare delivered, and is used to treat roughly 200 million patients annually. TCM is a precious part of Chinese culture which over the centuries has co-existed with Western medicine or “modern medicine.” In fact, Western medical facilities have co-existed with TCM in major Chinese cities for 200 to 300 years. In the big cities, where Western medicine is practised, it is often integrated with TCM. TCM universities offer diploma programs in acupuncture and moxibustion, Chinese herbs, Tui Na, food therapy, nursing and degree programs similar to those available at Western medical universities. The following section provides a description of the current status of TCM in China.

General Situation of TCM in China

In China, TCM falls under the control and regulation of the State Administration of TCM and Pharmacology. National strategies, law and regulations governing TCM are now in place to guide and promote the research and development of this promising industry. Meanwhile the production and sales of TCM products is very active. The annual sales of TCM products amount to around RMB81 billion (US$9.8 billion). This is made up of:

- **TCM Preparations**: RMB59.8 billion (US$7.3 billion) (78%)
- **TCM Processed Products**: RMB4.3 billion (US$0.52 billion) (~1%)
- **Chinese Crude Drugs**: RMB16 billion (US$1.94 billion) (21%)
Comparison of Sales of TCM and Western Medicine

TCMs (TCM Preparations and Processed Products) account for RMB64.1 billion (US$7.77 billion) spent, whilst RMB103.7 billion (US$12.6 billion) was spent on Western medicines, comprising RMB101.238 billion (US$12.3 billion) of domestic products, and RMB2.46 billion (US$0.3 billion) on imported products.

Average Annual Increase of TCM Industry During the Period 1980 to 2001

1980 – 1990 average annual sales increase rate was 19.4%
1991 – 2001 average annual sales increase rate was 23.4%
Values of China TCM Export Market on the Rise

Asia is the largest TCM export market for China, taking up 66.2% of the total market in 2002 with a value of US$444 million and a growth of 10.9% over the prior year. The second largest market is North America with US$100 million and 40.3% growth, followed by Western Europe with US$77.8 million and 30.5%, then Africa with US$11.3 million and 13.9%.

In many developed countries, the popular use of CAM is fuelled by concern about the adverse effects of chemical drugs, questioning of the approaches and assumptions of allopathic medicine, and greater public access to health information. At the same time, longer life expectancy has brought with it increased risks of development of chronic, debilitating diseases such as heart disease, cancer, diabetes and mental disorders. For many patients, CAM appears to offer a gentler means of managing such diseases than does allopathic medicine.

In the USA, the growing popularity of CAM is well documented. CAM generally comprises disparate treatment techniques which are not normally part of mainstream medicine, but which may complement it by addressing unmet needs. A 1998 Journal of the American Medical Association (JAMA) article stated that from 1990 to 1997, visits to CAM practitioners by Americans alone jumped almost 50%, exceeding the number of visits to all primary care physicians. The perceived effectiveness and safety, accessibility, a non-invasive, holistic approach and a desire for “high touch, low tech” techniques are among the chief reasons for CAM’s public popularity.

In many developed countries, certain CAM therapies are very popular. Various government
and non-government reports state that the percentage of the population that has used CAM is 46% in Australia, 49% in France and 70% in Canada. A survey of 610 Swiss doctors showed that 46% had used some form of CAM, mainly homeopathy and acupuncture. This is comparable to the CAM figure for the Swiss population as a whole. In the United Kingdom, almost 40% of all general allopathic practitioners offer some form of CAM referral or access.3

From the increase of CAM funding in USA, we can also witness the development of CAM in this country and it reflects a trend in this direction.

An important evidence supporting the above trend is that several years ago, the National Institutes of Health (NIH), USA, heralded the legitimate integration of TCM into Western medical practice. In its landmark 1997 Consensus Development Statement, it reported that “...promising results have emerged, ... showing efficacy of acupuncture in adult postoperative and chemotherapy nausea and vomiting and in postoperative dental pain. There are other situations such as addiction, ... in which acupuncture may be useful as an adjunct treatment or an acceptable alternative or be included in a comprehensive management program.”
Currently, traditional medicine is gaining more attention from modern pharmaceutical institutes as scientists have become aware that TCM is an almost infinite resource for drug development. There are approximately 250,000 species of plants, up to 30 million species of insects, and millions of microorganisms. Each species of plant produces a number of secondary metabolites. Although only 6% of species have been studied for biological activity, about 4000 new ingredients from plants are reported every year. Obviously, there is much more research to be done.

Can Traditional Chinese Medicine Complement Western Medicine?

One may wonder if TCM can complement Western medicine? The answer is positive. The curing of Severe Acute Respiratory Syndrome (SARS) in China provides a good example. Traditional Chinese medicine, featuring herbs, minerals and other natural ingredients, has proven useful in the treatment of SARS patients, especially when coupled with Western therapy. In June 2003 in Beijing, more than half of SARS patients were treated with a combination of Chinese and Western therapies. Statistical data show that these patients had a fever for an average of two days less than those who were treated only with Western medicine, according to the city’s health authorities.

Other Successes of TCM

Alzheimer’s disease (AD) is a progressive neurodegenerative disorder that affects more than 3% of those aged 65 to 74, and more than 45% of the population over the age of 85. It is the most common cause of dementia in adults, composing about 50% to 60% of all cases. It is estimated that by 2020, 30 million people will be affected by AD, and by 2050, the number could increase to 45 million.

The disease is characterized by three main occurrences: the build-up of plaques, the development of neurofibrillary tangles, and severe neuron and synapse loss. Also, deficiencies of neurotransmitters such as acetylcholine occur. The serious functional impairment, high cost of care, and emotional impact on relatives all add to the demand for successful treatment methods for AD patients.4

One of the symptomatic therapies used in the treatment of the AD is the inhibition of acetylcholinesterase, the enzyme that breaks down acetylcholine. This action allows for acetylcholine to act longer, thus increasing the function of the cholinergic system restoring some degree of cognition. The two drugs that are currently approved by the US Food and Drug Administration (FDA) for use are tacrine and donepezil. Although the drugs are able to achieve their goal and improve the condition of the patient, they have several adverse effects, and the results are not long term.

Huperzine A is an active alkaloid component extracted from ferns of the *Huperzia serrata* or *Phlegmariurus* species that has been used for centuries in Chinese traditional medicine. It is a novel potent, reversible and selective AChE inhibitor. Compared to tacrine and donepezil, the drugs approved by FDA for the treatment of AD, Huperzine A shows better effects in several aspects. It is more effective in activity and selectivity, and has better penetration into the central nervous system, longer duration of action time and lower toxicity. Its efficacy has been proven by two clinical trials conducted in China. A pre-clinical trial is in progress in the USA. It is now available in China as a drug and in the USA as a food supplement under different trademarks such as Huperazon™, Memorrzine™, etc.4
Concluding Remarks

TCM has now spread to more than 200 countries and the American NIH’s acceptance of acupuncture for some ailments is a signal that it is becoming an integral part of modern medicine worldwide. For a long time, the TCM was misunderstood, distorted and even equated with Voodoo magic. Dr. Manfred Porkert, a professor at the Institut für Ostasienkunde der Universität Munchen, Germany, stated in his article entitled Chinese Medicine — A Science in Its Own Right, “Scientific discoveries and inventions should eventually benefit all mankind. However, even in our age, historical conditions may for a long time inhibit or delay the diffusion of even the most mature and incontrovertible finding of an exact science. Traditional Chinese medicine is perhaps the most outstanding example in point.”5

In fact, plants were historically not accepted by medical establishment as medicine not because they were tested to be harmful or ineffective, but because they were too complex. Now that science and technology have advanced, it is time to re-investigate how medicinal plants can benefit modern science.

References

About the Authors

Dr Jin-Ming Kong obtained his BSc degree in 1985 from Department of Chemistry, Zengzhou University, People’s Republic of China, and MSc degree in 1992 from School of Pharmaceutical Sciences, Beijing Medical University, People’s Republic of China. After working in an institute for cosmetics study for several years in Beijing, he entered Nanyang Technological University, Singapore, to conduct the research on the flavonoids and anthocyanins in 1998. He was conferred PhD degree in 2002.

Dr Kok-Siang Tan is a science education lecturer at the National Institute of Education, Nanyang Technological University. He was a chemist in the pharmaceutical industry before joining the Singapore Education Service. His work at the Institute includes training of school chemistry teachers as well as research in school experimental chemistry and science education.
Dr Lian-Sai Chia obtained his BSc degree in Chemistry from Nanyang University, Singapore, and MSc and PhD degrees in Chemistry from the University of British Columbia, Canada. From 1972 to 1974, he was a recipient of the International Nickel Company graduate research fellowship. He was the Head of the Chemistry Division in the National Institute of Education, Nanyang Technological University. From 1991 to 2000 he was the Head of the Chemistry Division in the National Institute of Education, Nanyang Technological University. From 2000 to 2004 he was the Deputy Head of the Science and Technology Education Academic Group in the same institute. His research interests include chemistry of bioactive compounds (e.g. antioxidants, flavonoids, phenolics, terpenoids), environmental chemistry, sonochemistry, and learning strategies/instructional design in chemistry/science.

Dr Ngoh-Khang Goh obtained his first degree in Chemistry from Nanyang University in 1964. He was then awarded a PSC Overseas Scholarship to pursue his postgraduate studies in Germany, at the University of Muenster, under the "German Academic Exchange Service" scheme, and completed his studies with both 1st Class Master and Doctorate degrees. From 1991 to 2000 he was the Head of the Chemistry Division in the National Institute of Education, Nanyang Technological University. From 2000 to 2004 he was the Deputy Head of the Science and Technology Education Academic Group in the same institute. His research interests include herbal chemistry, environmental chemistry, materials science, instructional design in chemistry/science and process skills learning.

Contact Details:
Dr Chia Lian Sai
Address: National Institute of Education, Nanyang Technological University
1 Nanyang Walk, Singapore 637616
Tel: +65 6790 3885
Fax: +65 6896 9414
Email: LSCHIA@nie.edu.sg