

China

# CHINA TO STEP UP ON TCM RESEARCH



**T**he Chinese Ministry of Science and Technology (MOST) will invest 52 million yuan (US\$6.4 million) between 2005 and 2006 to support basic research in traditional medicine.

It will include research on traditional medicine under its National Basic Research Program (973 Program).

The 973 Program is China's on-going program for funding basic research. Approved by the Chinese government in 1997, it is organized and implemented by MOST.

54 fields of research will receive a total of US\$185 million from this program. The research subjects include genetically modified crops, sustainable energy, climate change, therapeutic cloning and research into major diseases such as HIV/AIDS and severe acute respiratory syndrome (SARS).

There will also be three sub-projects focusing on herbal medicine prescriptions, using modern science to study traditional medicine, and research into acupuncture and Jingluo—a traditional classification of 'channels' connecting different parts of the body, which combines the nervous and blood systems.

"The government has invested a lot of money in research on traditional medicine but it was divided among many institutes, meaning none of them had enough to implement a major research project," said Yang Xiuwei, a professor of pharmacology at Peking University.

By including traditional medicine in the 973 Programme, the government will support systematic research into its central theories. However, it is still not clear how many institutions the 973 Program's traditional medicine project will fund. 🌱

Singapore

# Molecular Acupuncture: East Meets West

**M**olecular Acupuncture is a Singapore-based biopharmaceutical company that develops innovative therapeutics, by combining advanced clinical and biotech expertise with Traditional Chinese Medicine (TCM). Established in 2003, the company focuses on diseases with proven acupuncture efficacy, in order to shorten product development and increase chances of success. Molecular Acupuncture's research focuses on discovering therapeutic proteins, associated with acupuncture. By understanding more on acupuncture's self-healing molecules, the company endeavours to develop new drugs that are as efficient as acupuncture itself.

"Acupuncture is a TCM approach of healing. It addresses many areas; has proven effectiveness; and has outperformed Western medicines in many indications. At Molecular Acupuncture, we apply pharmacogenetics technology to decipher the molecular basis of acupuncture," said David Picard, CEO of Molecular Acupuncture.

"On a long-term basis, we are working on the acupuncture healing molecules. Evidence shows that acupuncture triggers the synthesis and release of molecules like peptides, endorphins and neurotransmitters, and these are responsible for healing. Our technologies allow us to understand which molecule is synthesized and how these stimulate our body to generate its own drugs. From here, we hope to be able to develop new drugs that mimic the effect of acupuncture. However, currently, the full mechanisms behind the healing of acupuncture are not clearly understood. On a shorter-term basis, our research looks at using existing TCM drugs and devices to meet unmet medical needs in the West. Our clinical trials, which are mainly conducted in Singapore, aim to prove the efficacy of the drugs and devices in a western setting," said Picard.

The company's first clinical trial is currently being implemented at the National University Hospital, NUH, Singapore. Initial results are positive and the company plans to create a device for smoking cessation. Unlike nicotine-replacement therapies, Molecular Acupuncture's device aims to trigger the body to restore itself to its previous equilibrium. The company targets to have this product ready by end of 2005. They hope to market the product within Singapore, Japan, Korea, China, India and Europe. Other products in the pipeline include drugs for brain stroke recovery, treating migraines, reducing menopausal symptoms and treating cancer. 🌐

# A Critical Look at Traditional Medicine Research

Ping-chung Leung

## Introduction

While modern medicine has offered a lot to mankind and is still advancing at fast speed which is beyond our imagination many years ago, alternative methods of treatment are still gaining much support and popularity. In the past decade, both clinicians and patients adopted a realistic attitude towards alternative medicine. They wanted to know more about the true efficacy of alternative medicine so that it can be used as an alternative treatment option. Users of traditional medicine (a form of complementary alternative medicine [TM-CAM]) may have a much more committed attitude as they were more culturally influenced. However, the quest for more evidence on the effectiveness of the traditional treatment has also taken a renewed importance.

## Evidence on the Efficacy of TM

Traditional medicine (TM) can be traced back for at least over 2500 years. This was proved in excavations which revealed prescriptions in various carvings and ancient metal or bamboo acupuncture needles. The numerous volumes of well written texts on the art of healing were remarkable, they showed that proper medical documentation started as early as 2000 BC. The study of infectious disease was documented in the Han Dynasty (Zhang Zhong Jieng), medical ethics was discussed in the Tang Dynasty (Suen Tse-Miu) and forensic medicine developed in the Sung Dynasty (Sung Tse). There were also special volumes discussing about pulses (Mijing) and difficult cases (Nianjing). It is widely agreed that of the many systems of ancient medicine, chinese medicine possessed the most sophisticated philosophy and literature, even though other systems of TM-CAM had equally lengthy histories.

A survey was done in 2002 on the circulating journals in China pertaining to chinese medicine. The statistics showed that there has been a real, increasing interest on Traditional Chinese Medicine (TCM) in China and we can look forward to more modern utilisations, adaptations and research on chinese medicine.

Less than a decade ago, we saw a new journal appearing in China, titled *Chinese Journal of Integrated Traditional and Western Medicine*. Since then, more and more English language journals began accepting research articles related to Chinese medicine. To quote one example, the Journal of American Medical Association had one special issue in 1999 that was dedicated to alternative medicine, and 70% of the articles were on acupuncture or Chinese medicine. In the recent SARS outbreak, the *Lancet* published a remarkable report from Germany, stating the *in vitro* effects of a root extract, glycyrrhizin, in the control of replication of SARS associated coronavirus. This is a good example of the increasing attention being paid to Chinese medicine, which obviously will lead to more scientific research.

If modern medicine is perfect in the identification of the causes of diseases, their courses of events and subsequent effective treatment, there would be no place for TM-CAM. However, there are areas where the exact aetiology, pathological changes and subsequent management, are not yet clear. Therefore, the outcomes in these areas become uncertain. There are plenty of examples: viral infections, allergic conditions, degenerative diseases, chronic problems, aging and cancer. Patients who get disappointed with modern treatments frequently go for TM-CAM treatment as a supplement or substitution. It is not uncommon to see satisfactory results from such treatment. We cannot rely on such positive observations to establish the efficacy of TM-CAM. However, such observations should serve to encourage serious research on TM-CAM.

Research on herbal medicine in the past century has been focused on many aspects: from pharmacocognosy, quality control, to authentication and clinical uses. Of these approaches, much resources have been spent on attempts to identify the active principles and working out the chemical formula with the obvious intention of developing an effective drug. There are a few successful examples in and outside China. One remarkable successful attempt in China was achieved through research efforts on the herbal treatment for malaria. Derivatives of *Artemisinin* (Qinghao) have, apart from successfully developed into an effective anti-malarial drug, recently been found to be also effective against some other parasites and certain cancers .

Two successful examples outside China would be vincristine and vinblastin, extracted from the flower periwinkle and taxol from the bark of Yew trees. All these pharmaceuticals are cytotoxic drugs that are produced in the National Chemistry Laboratory of France. Although current successful examples have been few, they do provide solid evidence that TM could develop into efficacious pharmaceuticals.

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### **Major Challenges to the Evidence of Efficacy of TM-CAM**

There are many major challenges in TCM research. Here are some examples: past archives might not be reliable; clinical efficacy needs to be proven with modern methodology; the need to set up a system of research for evidence-based; setting the priority areas and finding the efficacy driven approach.

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## Conclusion and Recommendations

As the World Health Organization (WHO) advises that TM-CAM could be assessed in either one of the four ways, viz. evaluating in its own theoretical framework; in the theoretical framework of modern medicine; comparing its efficacy with modern medicine; and comparing with other systems of alternative medicine, one needs to decide, which way tends to be most fruitful (WHO, 2000).

I tend to believe that evaluating TM-CAM within the theoretical framework of modern medicine would be a way that is likely to give practical answers to difficult problems. This is a way that endorses modern scientific medicine as the mainstream management methodology of diseases and ailment, while at the same time trying to supplement deficiencies in the mainstream treatment. This is probably a way that is able to gain wide general acceptance. One method of implementing this evaluation could be achieved through the efficacy driven approach. 🌐

This is an abstract , you can read the full text in *“Chinese Medicine Modern Practice—Annals of Traditional Medicine”* by PC Leung.



# Curcumin as Anticancer Agent

A study carried out by researchers from the University of Texas, M.D. Anderson Center, USA, showed that curcumin has antioxidant, anti-inflammatory and anti-carcinogenic properties. Curcumin is a spice commonly used in curries and other south Asian cooking.

In their research, the scientists found curcumin to shut down nuclear factor-kappa B (NF-kB), a powerful protein known to promote an abnormal inflammatory response that leads to a variety of disorders, including arthritis and cancer. The study will be published in the journal, *Cancer*.

"The antioxidant, anti-inflammatory and anti-carcinogenic properties of curcumin derived from turmeric are undergoing intense research here and at other places worldwide," says one of the study's authors, Bharat B. Aggarwal, Ph.D., professor of cancer medicine in the Department of Experimental Therapeutics, USA.

The research showed that curcumin blocks a key biological pathway needed for development of melanoma and other cancers. The researchers treated three different melanoma cell lines with curcumin and assessed the activity of NF-kB, as well the protein, known as 'IKK' that switches NF-kB on. The spice kept both proteins from being activated, so worked to stop growth of the melanoma, and it also induced apoptosis or programmed death, in the cells. It also did not matter how much curcumin was used. "The NF-kB machinery is suppressed by both short exposures to high concentrations of curcumin as well as by longer exposure to lower concentrations of curcumin," the scientists said in their study.

"Curcumin affects virtually every tumor biomarker that we have tried. It works through a variety of mechanisms related to cancer development. We, and others, previously found that curcumin down regulates EGFR activity that mediates tumor cell proliferation, and VEGF that is involved in angiogenesis. Besides inhibiting NF-kB, curcumin was also found to suppress STAT3 pathway that is also involved in tumorigenesis. Both these pathways play a central role in cell survival and proliferation," said Aggarwal.

Currently, there are two ongoing Phase I human clinical trials. These trials are to test the ability of daily capsules of curcumin powder to retard growth of pancreatic cancer and multiple myeloma. Another Phase I trial is planned for patients with breast cancer. ●