

# The Modernisation of Chinese Medicine



## The *Industrialist* looks at how Chinese medicine advances in the 21<sup>st</sup> Century and Hong Kong' role to play.

**H**ow does a 4,000 year-old medical tradition continue for another 4,000 years? The question preoccupies the traditional Chinese medicine (CM) profession as its perennial skills and knowledge undergo modernisation. With export of CM from mainland China exceeding US\$1 billion in 2006, both the Mainland and Hong Kong recognise the huge development prospect of CM and policy fronts have pushed the CM industry into the spotlight. However the sheer technical complexity associated with CM, safety concerns together with increasingly stringent regulatory developments worldwide also present those in the industry with significant challenges.

For at least the past decade, there have been efforts to merge CM with modern science that would dispel the stereotype of promiscuous CM being grounded in mysticism. With scientific support, both Mainland and Hong Kong governments as well as businesses aim to spearhead CM into the current age to give worldwide consumers confidence while taking an inherent aspect of Chinese heritage to global recognition.

Certainly throughout Asia, CM remains rooted and part of daily lives, however CM is now being popularised in the west. Often perceived as an alternative form of medicine, CM has found niches where mainstream western medicine has failed. And with globalisation and the availability of advanced pharmaceutical technologies, CM has not merely gained a new lease on life but a potential revolution for rejuvenation.

### Regulatory Framework

Constructing a regulatory framework and establishing consistent professional standards was the conspicuous first step. In 1991, CM

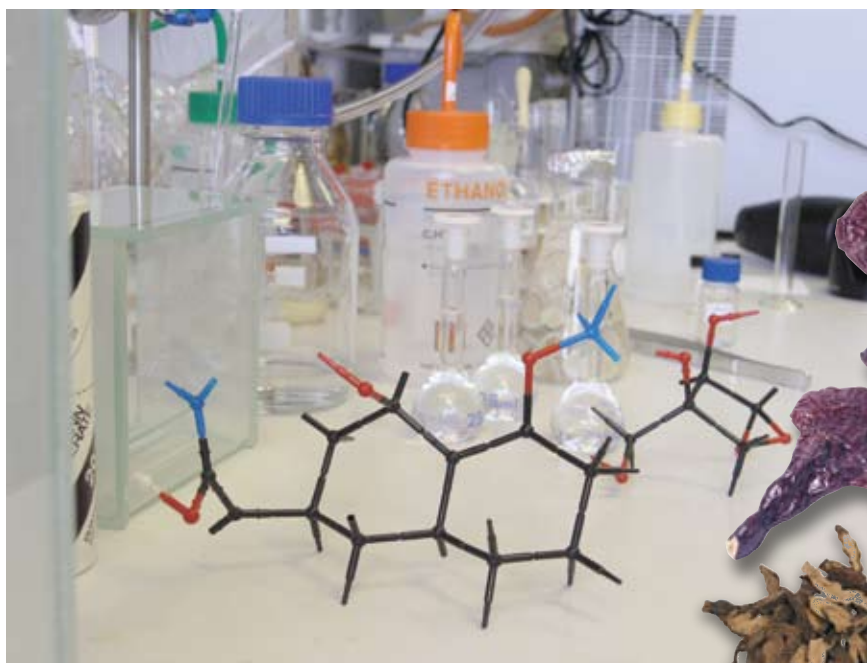


was established as an essential component of the Mainland's national health policy. In Hong Kong, the passing of the Chinese Medicine Ordinance (Cap. 549 of the Laws of Hong Kong) in July 1999 was likely the most important development milestone for the lo-

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cal CM industry. The Ordinance governs the practice of CM and the use, manufacture and trading of Chinese herbal medicines as well as proprietary CM.

The regulations are governed by the Chinese Medicine Council of Hong Kong (CMCHK) - a statutory body tasked with implementing specific regulatory measures. "The evolving regulatory regime lays the groundwork for robust development and modernisation of the CM industry through R&D, education, training, upgrading of trade practices, provision



of CM medical services etc., hence giving confidence for consumers and assuring public health,” explains **Dr Edmund Lee, executive director, Hong Kong Jockey Club Institute of Chinese Medicine (HKJCICM).**

For centuries, CM practitioners knew which herbal remedy did *what*, however with modern scientific analysis, the *how* and the *why* behind each remedy shall be answered.

Respect for tradition and drive for innovations and applications combining traditional knowledge, modern science, technology and business skills are crucial for the sustainable development of CM. The establishment of the regulatory framework is thus a huge step towards turning CM into the mainstream, and a rigorous platform for modernisation of CM and development on its own.

It is important to distinguish the difference between *modernisation* of CM which is the current aim from *westernisation* of CM, which would witness the absorption of CM into western medical science and thus the relegation and lost of essential CM knowledge. Science-based CM modernisation provides an assured avenue for development and legitimacy.

### The Hard Science

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herbal remedy did *what*, however with modern scientific analysis, the *how* and the *why* behind each remedy shall be answered. At the foundation, the *Chinese Pharmacopoeia* published by the China Pharmacopoeia Committee provides literature, quality, usages, formulations and safety attributes related to CM and associated products. It also provides a regulatory basis for further scientific standardisation.

In going beyond *what* works to understand *how* it works and *why* it works, it is necessary to obtain the science and evidence base of CM, thus to assure quality across the value chain from raw materials to final products.

Apart from traditional techniques, chemical profiling, microscopy and DNA sequencing are being utilised to accurately authenticate CM. Understanding the constituents of CM and the ability to isolate the main CM fractions or ingredients also mean specific remedies can be potentially engineered for treatment of illnesses.

“While the *Pharmacopoeia* outlines the basic herbal ingredients, different batches of the same herb may give inconsistent results. Different batches affect chemical composition and because each CM consists of several or many herbal ingredients, a variation in one ingredient could react unexpectedly with others. That is why we need extensive understanding on herbal ingredients by analysing and cataloguing them individually to see how they chemically behave, react in the human body as well as with other ingredients,” elaborates **Prof Paul But, co-covener of Standardisation and Safety of Chinese Medicines, Institute of Chinese Medicine, Chinese University.**

As each herbal ingredient consists of many chemicals, the verification process can be complex, and associated laboratory techniques remain a significant challenge. Take Ginseng for example, its chemicals – ginsenosides, like other chemicals found in other CMs, contain antioxidant compounds; while antioxidants

is known for acting against free radicals, ginsenosides also have effects on the immune, hormonal, cardiovascular and central nervous systems. Although modern scientific studies have concluded the combination of ginsenosides in ginseng enhances concentration, and both visual and motor coordination, the exact chemical mechanism behind these effects remains unclear.

As Prof But explains, modern analytical research basically aims to confirm what has been known for thousands of years. Further analysis is performed on select CM to evaluate how it works as well as to isolate key constituents for further clinical or product development. Dr Lee concurs and stresses the need to enrich the analytical toolbox and scientists' skills as an integrated part of substantiating CM with scientific evidence.

Value-added developments also call for biological, functional and clinical research which provides overall evidence and quality assurance of CM recipes or preparations, and opens up new applications of CM. Together with the application of modern manufacturing techniques and adoption of good quality practices (from agriculture and harvesting, safety evaluation, manufacturing, clinical research and sales), CM can be produced with consistent quality and in forms to maximise convenience

and efficacy. For instance, many CM now come in forms of granules, tablets or other forms adopted for western drugs.

### Prescribing the Future

So where does Hong Kong stand regarding modernisation of CM? More specifically, where on the value chain can Hong Kong utilise its strengths? Without a deep-rooted pharmaceutical industry, Hong Kong's role on the value chain could be rather limited. Yet there are areas along the chain that are suitable for Hong Kong to leverage and further sharpen its edge.

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Prof But further explains: "From the lack of scale, lack of an industry incentive system to limited enterprise resources, it's indeed hard to compete head on with some countries in advanced pharmaceutical development. Nonetheless, Hong Kong-based research centres and tertiary institutions are primed in areas from basic research, chemical analysis, clinical research to quality assurance."

Development of CM requires multi-discipli-



nary expertise as well as participation of Government, non-governmental organisations, research community and the industry. As the strategic local platform for CM development, the HKJCICM has, through funding and management, established partnerships with research institutes and the industry, in the Mainland and overseas. The technical intricacies of CM suggest that no single firm or institution can effectively complete a CM product from scratch, instead mobilising the network of specialisation helps achieve the desired result.

With the link up of InvestHK, Hong Kong Trade Development Council, Hong Kong Science and Technology Parks, Hong Kong Productivity Council, other industrial associations and stakeholders, there exists the necessary network to extensively modernise CM into a scientific profession.

### Without innovation and adequate IP protection, application prospects will be minimal.

“By combining the strategic advantages of Hong Kong with available scientific and technological strengths, Hong Kong remains an attractive partner for business and technological partnerships”, say Dr Lee. “However, facing concurrent competition and collaboration, Hong Kong, needs to address human capital development, strengthen infrastructural support for research and translate research outcomes into applications. The latest development of Government initiatives to foster Mainland-Hong Kong technological innovations and partnerships are in the right direction,” he comments further.

With increasing business activities into the Mainland and elsewhere, the fact that Hong Kong possesses a small industry base needs not deter value-added developments through R&D and technological innovations. The HKJCICM for instance adopts a business model different from a traditional funding agency and is building its portfolio of R&D products and technologies in partnership with local and Mainland research institutes. For example, DNA fingerprinting technologies (with CUHK), treatments for irritable bowel syndrome (with CUHK and HKBU), perimenopausal women health (with CUHK and Shanghai Innovation Center of TCM), rheu-

matoid arthritis (with HKBU) and cardiovascular disorders (with HKPolyU) etc.

Other industry-relevant initiatives include the set up of a CM Laboratory to support development of analytical methodologies, chemical markers and industry standards for quality control of CM and for CM natural product applied research. The HKJCICM is also developing its in-house CM information repository *Chinese Medicine Hong Kong* that provides e-news on Government policies, R&D updates, industrial developments and a CM databank that captures information of its funded projects and partnering activities from medicinal plants, quality control of CM, confused uses of CM and safe use of CM etc.

“Further commercialisation of CM must be based on market needs, good science and protection of IPs”, says Dr Lee. One aspect of contemporary business that has met resistance from some CM quarters in the past is intellectual properties (IP) protection.

He explains further: “The traditional approach of safeguarding recipes and techniques as secrets will work to an extent. However, without innovation and adequate IP protection, application prospects will be minimal.” Development of medicines requires significant investment, hence the need for patent protection. It is therefore crucial for practitioners in the field to maximise IP protection throughout the development process.

Through years of meticulous research and strategy on IP protection of research results, the Academy of Military Medical Sciences in the Mainland, for example, has successfully licenced its research results to an international firm for further development and product commercialisation of CM-based functional foods and pharmaceuticals.

Facing difficulties in promoting CM-based products to international markets, the Beijing-based institute has resorted to licencing patents to overseas



firms. This successful licencing case marks the progressive international recognition of the application value and level of R&D results in the Mainland, and paves the way for CM to enter international markets. Many Hong Kong organisations have investments or interest to invest in CM and related health businesses. Such organisations will be able to play a vital role in incubating select projects for commercialisation.

As in any industry, how policy and related regulations are put to work determines the behaviour of the players and nature of the industry. Understanding the industry and associated risks is also key to investment and business success. Prof But sees substantial prospect of market development through leveraging Hong Kong's areas of specialisation and alignment of regulatory standards with the Mainland. Having coherent standards, such as mu-

tual recognition of the Good Manufacturing Practices (GMP), can stimulate business and investment.

For both the Institute of Chinese Medicine at the Chinese University and the HKJCICM, the years of setting up laboratories, building up partnerships, amassing technical knowledge and exploring commercial partnerships have paved the way for further modernisation of CM. Together with the development efforts from other institutions and participation of international collaborative projects, Hong Kong is already on the world map charting ahead with science and evidence-based developments of CM for the benefits of human health and economic developments. ➡

For further details on R&D, business opportunities etc, please browse –  
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