

Dr. Kam-Ming Ko: following the theory of Chinese medicine is the key to the future of Chinese herbal medicine!

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Editor's note

Dr. Ko has provided his insight into his focus research on the antioxidant mechanism of Chinese tonic herbs and shared with us the prospect on the future development of Chinese Herbal Medicine. He further elaborated the reason behind the challenges of promoting Chinese medicine to the public and provided some of the suggestions on what we can do currently to raise public awareness on the effectiveness of Chinese Herbal Medicine.

For details, please refer to the video interview we conducted with Dr. Kam-Ming Ko.

Expert introduction

Dr. Kam-Ming Ko is currently Professor in the Division of Life Science at the Hong Kong University of Science & Technology (*Figure 1*).

After graduating from the Chinese University of Hong Kong, he went on to Canada and obtained his PhD in pharmacology at the University of British Columbia in 1990. Later, Dr. Ko returned to Hong Kong to pursue his research work on Chinese herbal medicine.

Dr. Ko researches on the antioxidant and immunomodulatory properties in Chinese tonic herbs in establishing their scientific basis in terms of modern medicine, and has so far edited three books and published more than 200 scientific papers and book chapters on related topics. Dr. Ko is also a pioneer in developing proprietary Chinese herb-based health products and skin care products in Hong Kong.

Interview

LCM: *Out of the variety of medical disciplines, why are you particularly interested in the study of Chinese herbal medicine?*

Dr. Ko: I am a pharmacologist by training. My training is focusing on free radical biology and medicine. One of the



Figure 1 Dr. Kam-Ming Ko.

big areas is antioxidant research. It is mainly the research on preventing the damaging effect produced by free radical in your body, which is unavoidable and also being considered as one of the main causes of aging and age-associated diseases. The reason why I studied Chinese herbal medicine is that it is a relatively unexplored medical discipline. What I mean by the word “unexplored” is about how to use the modern pharmacological methods to demonstrate the effectiveness of the herbs in the prevention or in the treatment of diseases.

My expertise area in Chinese herbal medicine focuses on preventive herbs. “Preventive herbs” means the herbs that use for preventing diseases. In Chinese medicine, herbs could be divided into two big categories: one is what we called “tonic herbs”—before you get sick, you are under a sub-healthy condition, then you take the tonic herbs. Another one is used as therapeutics - let’s say when you are already sick, and you go to pay a visit to a Chinese medicine doctor. Then, the doctor will give you an herbal prescription in order to let you get rid of the disease.

LCM: *Your research is focused on the antioxidant and immunomodulatory properties in Chinese tonic herbs. Would you briefly introduce us to your current work on antioxidant research?*

Dr. Ko: As you can see, there's already a lot of antioxidants in the market being used by people such as vitamin E, vitamin C and other phytochemicals. The main question is, why do we bother to investigate the antioxidant effect of Chinese herbal medicine? I can think of two reasons—for one, an antioxidant may be able to retard the aging process. That's the hypothesis and we would like to test it using antioxidant-containing Chinese tonic herbs. For two, we have been given the knowledge that Chinese herbal medicine has been using for preventing diseases for so many years, which actually points out a major distinction between Chinese medicine and Western medicine.

In other words, Chinese medicine can be perceived as know-how that allows us to prevent diseases. However, for Western medicine, they do not have such a strategy. If many herbs have been used for the prevention of diseases or retarding the aging process, those herbs should contain very effective antioxidants. Looking back to the long history of Chinese medicine, nobody truly understood what's free radical. Therefore, if people have been taking these Chinese tonic herbs regularly to safeguard health, these herbs should be deemed to be effective. That's why I reckon that Chinese herbal medicine is like a treasure, yet nobody explored it fully. So, I am happy to use my knowledge in antioxidant research to contribute some efforts to the study of Chinese herbal medicine.

LCM: *We realize that you are a pioneer in developing proprietary Chinese herb-based health products and skin care products in Hong Kong. What are the challenges encountered during the development of these products?*

Dr. Ko: The antioxidant research has been ongoing for almost more than half a century. We can see that there are many scientists who jump on the bandwagon and then try to explore more on the research and find out whether there is an effective antioxidant for preventing diseases. First of all, they looked at free radical scavengers such as vitamin C, vitamin E, and other molecules that can neutralize free radicals. Later, they applied the same principle to the research in Chinese herbal medicine. Nevertheless, the results have shown that Chinese tonic herbs are not better

than vitamin C and vitamin E in scavenging free radicals.

We came to a realization that there must be some compounds or active ingredients in the Chinese tonic herbs that can effectively regulate the defense mechanism in the human body itself. Hence, we used different approaches to look at how Chinese herbs or the ingredients can be able to regulate the cellular antioxidant defense. Luckily, the results turned out to be very much in line with the theory of Chinese medicine. It is very important for us to know that you have to rely on your own defense system in your body when it comes to the prevention and/or treatment of diseases. One example is about our immune system. If you suffer from a cold or influenza or even cancer, it is mainly your immune system that makes you be able to get rid of the disease. Applying this principle to the antioxidant research, the most effective way to get rid of the disease is indeed our own or cellular antioxidant defense mechanism in our body.

LCM: *Chinese herbal medicine, as a relatively new discipline, seems to hold many future possibilities. How do you see the future development of this field in the coming 20–30 years?*

Dr. Ko: The development of Chinese herbal medicine has been ongoing for 30 years. We even have successfully launched some health-based products in the market for over 20 years. I think the reason behind is that Chinese herbs have superb antioxidant, which allows them to defend our body from getting a disease effectively. Nonetheless, should we take only one herb, a single compound, or multi-component formulas in order to safeguard health? We are not easily satisfied and I believe there are still many possibilities. Currently, we are still working very hard in this regard. As I have mentioned before, if we want our products to be useful and highly applicable to people, we have to develop the products in accordance with the theory of Chinese medicine. It is because the so-called “herbal formulas” are formulated according to a Chinese medicine principle in order to produce a better effect on the human body and minimize the side effects in long-term usage.

For instance, I have a product developed from a formula of traditional Chinese medicine almost 21 years ago. We launched the product on the market at that time. In 2018, the product is still very popular on the market, and the sales are also increasing. I believe that there must be a reason

why we can survive all these times. It's because the product is simply effective for users. What we can see from this phenomenon is that we always have to follow the theory of Chinese medicine, and the product derived by the formula will produce the optimal effect on people.

As for the future, I think the key question is: How can we decipher the secret in the theory of Chinese medicine? The answer is clear and simple—by using a modern scientific method to establish the basis for explaining the theory of Chinese medicine. I have been working for Chinese tonic herbs for 28 years. In the foreseeable future, only by focusing on developing an effective product is not enough, we should also try to use the modern language, or the pharmacological language to explain the theories in Chinese medicine such as what is “yin” (阴) and what is “yang” (阳)? Or else, the general public (laymen) will never understand the sophisticated “treasure” of Chinese medicine.

LCM: As the Editorial Board Member of LCM, do you have any words to say to our readers/peers in your field?

Dr. Ko: From the perspective of promoting the journal, I certainly welcome more articles or research articles of Chinese medicine. We should use modern methods to explain the theory (essence) in Chinese medicine as I can see most of the published papers on Chinese medicine in many journals are mostly about pharmacological studies in relation to certain diseases. I strongly believe that it is crucial for us to contribute articles that are closely related to the theory of Chinese medicine, instead of the pharmacological data and chemical analysis.

In terms of the essence of Chinese medicine, it all comes back to my previous questions. For instance, what is meridian tropism? (归经), what is yin-yang? (阴阳), how to measure it and how do we differentiate between yin-yang and yang-qi (阳气)? No one understands until we started explaining it using scientific and modern language. Since day one my laboratory has adopted this approach in investigating Chinese tonic herbs. I would love to see more researchers to input much vigor in this endeavor.

I have been participating in a lot of public education events, such as going to high schools to explain what is “qi”(气) using the modern language in biochemistry. Public education is one of the platforms to let more people get in touch with the basics of Chinese medicine, it certainly needs a collective effort in order to impose a bigger impact as a

whole. But I regard it as a first step to introduce Chinese medicine to young people and raise public awareness of the effectiveness of Chinese herbal medicine.

All in all, I am very positive of the future of Chinese herbal medicine. I definitely encourage investigators to work in this direction, even though it would be a tough journey as most researchers tend to only work on the frontier in life sciences, and they might not be able to understand Chinese herbal medicine. I do want to point out once again as long as we can explain the usage of herbal formula using a modern language and follow the theory of Chinese medicine, then it would make it a lot easier in promoting and put forward the idea of Chinese medicine to the public.

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