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Introductory Chapter: Therapies Based on Kidney Essence and Qi in Chinese Medicine

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1. Introduction

Traditional Chinese medicine (TCM) is the precious treasure that Chinese nation accumulated in the process of struggling with disease for thousands of years, and she knows life and disease phenomenon in a unique perspective, is the important guarantee for the thriving of the Chinese nation, and is an immortal legend in the process of human civilization development. TCM is both a treasure trove of Chinese wisdom and the medical science based on ancient Chinese philosophy. TCM will provide new philosophical thinking and selective application for modern medicine. TCM theory on which it is based involves entities like Essence (Jing), Qi (Chi), and “meridians” that appear ambiguous, and the internal organs like the kidney and the spleen are understood very differently from those of modern anatomy. Even today TCM practitioners use these essential theories to understand, diagnose, and treat health problems.

2. The concept of “Essence” and “Qi”

“Essence” and “Qi,” important categories in the ancient Chinese philosophy, are simple understanding of natural phenomena. The connotation and denotation of the concepts “Essence” and “Qi” are consistent in the ancient Chinese philosophy; both are invisible subtle materials existing in the universe with continuous movement and are the primitive composition of the universe, i.e., “Essence” is “Qi” and is also known as “Essence Qi.” The concepts “Essence” and “Qi” in ancient Chinese philosophy were introduced into TCM, great changes about their connotation and denotation have taken place, and “Essence” and “Qi” became two concepts. “Essence” is the overall appellation on tangible materials inherited from the parents and acquired as useful subtle substances to the human body, is the most basic material that constitutes the Zang-Fu, tissues, and organs and maintains life activities of the human body, is the source of human life, and is also the origin of other life materials of the body.

“Qi” in TCM is the overall appellation on all the invisible subtle energetic materials in constant motion in the human body and functional activities of internal organs, is both an important part of the body, and is the power source of vital activities. In terms of its source, Qi originated from Essence and can be converted by Essence and is a more subtle material than Essence; Qi can also produce Essence, Essence, and Qi can be interconverted. In terms of its function, Qi can stimulate and promote the functional activities of the Zang-Fu organs and control the process of the human body; Qi is the fundamental that supports the life activity of the body, so when the movement of Qi stops, the end of life will arrive. Essence belongs to Yin, is tangible, and tends to be a material property; Qi belongs to Yang, is intangible, and tends to be a functional property. Essence is the material basis of viscera functional activities, and Qi is the motive force of promoting and regulating physiological activities of Zang-Fu organs.

Qi, as the master of the brain, regulates Yin-Yang and five elements, tonifies the five vital organs of the human body, keeps the six hollow viscera unobstructed, and is in charge of chemical and biological transformation and defenses. Qi of the human body comes from the congenital Essence inherited from parents, the refined food Essence transformed by the spleen, and the fresh air inhaled by the Lung. After birth, the congenital Essence is stored in the kidney to promote development and to control the reproductive activity of the human body. “Both life and death depend on Qi.” Qi always underpins the basic theory of TCM and acts as its cornerstone. Qi has been used as a healing technique in China for 4000 years. This shows that Qi is closely related to health, disease, and life.

3. Qi and diseases

According to TCM, “Qi is the root of the human”; “All the diseases originate from Qi.” Qi dominates the whole vital activities. Qi can make the human body work in an orderly fashion by promoting a variety of physiological activities; “Qi deficiency” will lead to a decline of physiological functions. As one part of a central medical classic *The Yellow Emperor’s Inner Canon*, “Plain Questions” pointed out that consumption of the vital Essence Qi leads to deficiency. The basic idea of TCM to prevent and cure diseases is strengthening vital Qi to eliminate pathogenic factors. Strengthening vital Qi can improve body’s resistance to disease, in order to eliminate weakness syndromes, ward off illnesses, and be physically strong. On the understanding of the etiology, TCM theory emphasizes the cause of disease—“vital Qi deficiency”—especially.

Xing-Tai Li proposes a scientific hypothesis that “Qi is bioenergy” [1] and Qi deficiency can lead to bioenergetic dysfunction, which can be improved by Qi invigoration and demonstrates that Qi invigoration was achieved through improved mitochondrial bioenergetics [2].

The central player in bioenergetics is the mitochondrion. Bioenergetic dysfunction is emerging as a cornerstone for understanding the pathophysiology of mitochondrial diseases. Mitochondrial dysfunction would undermine the function of cells, tissues, and organs, thereby causing cancer, diabetes, obesity, strokes, cardiovascular diseases, neurodegenerative diseases, aging, etc. Currently, there are no effective treatments, yet the causes of these

diseases remain a mystery, while their incidence and morbidity either remain constant or are increasing. Huge investments in biomedical research in recent years have resulted in some striking accomplishments but have failed to reveal the anticipated causes for the diseases. Western medicine is in crisis [3]. According to TCM, Qi deficiency is the common cause of these diseases. Therefore, Qi-invigorating therapy can be used for mitochondrial diseases [4].

4. Kidney stores Essence theory

Essence Qi theory of ancient Chinese philosophy provides a premise condition to the birth of the Kidney stores Essence theory of TCM. Kidney stores Essence, Essence can be converted to Qi, and Qi converted by the Kidney Essence is Kidney Qi; therefore, if the Kidney Essence is sufficient, Kidney Qi is filling, and if the Kidney Essence is deficient, Kidney Qi fails. Kidney dominates growth, development, and reproduction of the body; this is the physiological function of Kidney Essence and Kidney Qi. Thus, the life processes of the human body, including birth, growth, prime, aging, and death, as well as reproductive ability, all depend on the rise and fall of Kidney Essence and Kidney Qi. Kidney Essence deficiency will result to insufficient reproductive Essence and ultimately lead to male infertility, female menopause, and infertility. Deficient Kidney Essence cannot produce enough Kidney Qi, so the sexual hypofunction will occur.

Kidney Qi can be divided into Kidney Yin and Kidney Yang, whose material basis is Kidney Qi, and they are the two different attributes of the Kidney Qi, of which Kidney Yin is the source of Yin Qi in the whole body and Kidney Yang is the root of Yang Qi in the whole body; the balance and coordination between Kidney Yin and Kidney Yang maintain the function of Kidney in TCM [5].

In Chapter 1, Shuang Ling et al. reviewed the effects of Kidney Essence-, Kidney Yang-, Kidney Yin-, Kidney Qi-, and kidney-nourishing Chinese herbal formulas and single herbs on the kidney endocrine substances and propose the idea that kidney endocrine substances, such as renin, kallikrein, erythropoietin (EPO), calcitriol, bone morphogenetic protein (BMP)-7, and klotho, are potential candidates of the material basis of Kidney Essence.

5. Kidney Essence, Qigong, and diabetes

Diabetes mellitus is a common degenerative disease and one of the leading causes of morbidity and mortality in developed countries. Diabetes has become a worldwide epidemic with a substantial social and economic burden [6]. The prevalence of this disorder is rising dramatically; an estimated 370 million people worldwide will be suffering from diabetes in 2030 [7]. Type 2 diabetes mellitus (T2DM) is a complex, chronic, metabolic disease with hyperglycemia and is the most common form of diabetes. The exact cause of T2DM is unknown in Western medicine. The modern studies show that bioenergetic dysfunction is emerging as a cornerstone for understanding T2DM. The mitochondria, whose main function is the production of the energy substance adenosine triphosphate (ATP), all the life activities depend on

ATP, mitochondrial dysfunction is at the centre of understanding many metabolic disorders, such as obesity and T2DM [8, 9]. Imbalanced energy homeostasis is characteristic of obese and T2DM patients [10]. This suggests that mitochondrial dysfunction might contribute to metabolic inflexibility and insulin resistance [11]. The ability of pancreatic β -cells to regulate blood glucose levels relies on mitochondrial ATP generation. Adenylate energy charge was decreased in prediabetic rats, as were ATP and adenosine diphosphate (ADP) levels. Conversely, adenosine monophosphate (AMP) levels were increased, evidencing a decreased ATP/AMP ratio [12].

Qigong is one of the major Chinese medical therapies used to strengthen Qi through self-practice and to manage the state of Qi to prevent and cure disease. Qigong therapies are popular in China as Qi therapies are in Asia. Medical Qigong is defined as the system of authentic Qi (vital energy) practice, which empowers the body to heal itself and to facilitate the healing process of others. Qigong exercises that focus on boosting Kidney and Spleen Qi can be particularly beneficial in managing T2DM [13–15].

Genetic, dietary, lifestyle, and environmental factors play a role in T2DM. Improper diet, overeating of certain foods, and overtaxing the body can weaken the Qi energy and disrupt the balance of the Zang (organs). Likewise, a sedentary lifestyle can weaken the Qi because not enough Qi is generated to invest in the strengthening of the body. Medical Qigong involves appropriate management and regulation of all energetic and informational communications. Receiving acupuncture treatments from an experienced Chinese medical practitioner supports the management of T2DM by improving the energetic function of the internal organs.

The kidney is central to the understanding of the pathogenesis of T2DM in Chinese medicine. Kidney is the root of Qi and the foundation of Yin and Yang in the body. The Kidney stores the Essence or one's inherited original reserves of vital energy. If one has constitutional kidney deficiency, one may already be deficient in Yin and may be predisposed to other organ imbalances. In the view of TCM, the etiology of diabetes can originate with pre-heaven Kidney Essence or Kidney Yin deficiency and weakness of the five Zang organs that predispose a person to further imbalances such as Spleen Qi deficiency. Congenital Kidney Essence and vital Qi deficiency are the intrinsic factors to diabetes. In addition, chronic Kidney Yin deficiency can diminish the generation of Kidney Yang. Combined Kidney Yin and Yang deficiency can in the long run lead to Kidney Qi failure, making the kidney unable to regulate the exiting of body fluids and manifesting as the need to urinate directly after drinking [16]. In Chapter 3, Guan-Cheng Sun et al. look at how TCM views diabetes as well as new understandings of how Qigong can support the management of T2DM and discuss the changes of mitochondrial energy metabolism and bioenergetics in the process of T2DM onset.

6. Kidney Essence and reproduction

Infertility is a worldwide problem affecting people of all communities; infertility has a wide range of causes stemming from three general sources: physiological dysfunctions, preventable causes, and unexplained issues [17]. It is an important medical and social problem in

the world as regards 15% of couples are infertile and 40% are infertile because of male factor infertility [18]. The ancient Chinese physicians think that the main pathogenesis of infertility is kidney deficiency; kidney-nourishing therapy is an effective method to the treatment of infertility. Kidney deficiency syndrome was positively correlated with Yin deficiency and Yang deficiency constitution. The Kidney stores Essence to control the reproductive activity. Kidney Essence is the basis of the conception; the Kidney Essence-, Kidney Qi-, Kidney Yin-, and Kidney Yang-tonifying therapies were often used according to treatment based on syndrome differentiation. Acupuncture and moxibustion work by regulating Qi flow over the meridians. According to the Yin and Yang theory, Kidney Essence pertains to Yin, while the Kidney Qi pertains to Yang. Kidney Essence is the most vital substance both constituting the human body and supporting its functional activities; it is the foundation of Kidney Yin and Kidney Yang. Kidney Yin provides material basis for the activities of human body, while Kidney Yang promotes the functions of the organs. In Chapter 4, Yen-Nung Liao et al. reviewed the scientific evidence that kidney-nourishing Chinese herbal formulas, single Chinese herbs, acupuncture, and moxibustion are used for female and male infertility.

TCM, with its long history of clinical practice, occupies an important place among the “alternative medicine” that has been gaining attention in recent years. Because of the general mildness in nature and the emphasis on relief, balance, and harmonization rather than forceful suppression, many good Chinese medicines are particularly suited for pregnancy. Lu Li et al. summarize in details the Chinese medicines classified as contraindicated, not recommended and cautiously used for pregnancy in Chinese *Pharmacopeia*. The authors obtained the most specific safety information for pregnancy. They gathered information about the adverse effects and potential toxicity of the Chinese medicines for pregnancy.

7. Silicosis and Qi deficiency

Silicosis is the most common pneumoconiosis globally, with higher prevalence and incidence in developing countries. To date, there is no effective treatment to halt or reverse the disease progression caused by silica-induced lung injury [19]. Effective therapies have to be found in order to reduce morbidity and mortality related to silicosis. In TCM, the lung dominates Qi of the body, the kidney is the root of Qi, and silicosis has close relations with the lung and kidney. The occurrence and development of silicosis are a chronic evolution process from the lung to the spleen and from the spleen to the kidney; finally, the lung, spleen, and kidney were all injured. Both Qi and Yin were injured, and vital Qi was depleted gradually. In Chapter 5, Shengjun Jiang et al. propose a novel treatment method of silicosis by spraying with Chinese herbal kombucha, which is made by fermenting extracts of Chinese herbs with a kombucha culture.

In summary, diabetes, infertility, and silicosis are either caused by or related to Kidney Essence and/or Qi deficiency in TCM, therefore, the introductory chapter subtitled “Therapies Based on Kidney Essence and Qi in Chinese Medicine.” We hope you are interested in this book.

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