

ACADEMIC EXPLORATION

Traditional Chinese Medicine and the Positive Correlation with Homeostatic Evolution of Human Being: Based on Medical Perspective*

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ABSTRACT Adaptation is an eternal theme of biological evolution. The paper aims at exploring the conception of positive correlation between traditional Chinese medicine (TCM) and human homeostatic evolution based on medical perspective. Discussions mainly involve TCM conforming to natural laws and natural evolution of life, spontaneous harmonization of yin and yang and operating system of human self-healing, modern human immunology and human endogenous immune function in TCM, self-homeostasis of human micro-ecological state and balance mechanism on regulating base in TCM, as well as adaptation—eternal theme of biological evolution and safeguarding adaptability—value of TCM. In perspective of medicine, theory and practice of TCM are in positive correlation with human homeostatic evolution, and what TCM tries to maintain is human intrinsic adaptive capability to disease and nature. Therefore, it is the core value of TCM, which is to be further studied, explored, realized and known to the world.

KEYWORDS traditional Chinese medicine, self-adaptability, homeostatic evolution

With specific external conditions, human body is capable of forming specific structure by itself to attain orderly state where it can learn and adjust on its own to change, grow, give birth and evolve. However, it will decline and fall if the body fails to adapt to environmental changes. This complicated system is referred to as complicated adaptation system. To keep the system stable and away from chaos, the system has to obtain feedbacks in time, and adjust itself accordingly.⁽¹⁾

Traditional Chinese medicine (TCM) implies regeneration philosophy marked by balance of yin-yang and harmony of five phases (Wood, Fire, Earth, Metal, Water); thus it focuses on treatment of human having disease to maintain human self-adaptability rather than treatment of a specific disease. In other words, maintenance of self-adaptability of human body is to maintain the unique characteristic and developing tendency of endogenous self-organization and self-adaptability of human evolution. This homeostasis in TCM aims to maintain optimal state of the body achieved through self adjustment with joint effects of internal and external factors. The optimal state here above could facilitate coadaptation and coevolution of both nature and human. As man's adaptability is unique in biological world for its impossibility to be duplicated, respect for it means respect for unique adaptability of human beings. The well-known natural law is that those who adapt survive and those who fail to adapt stop evolution or become extinct.

TCM Conforming to Natural Laws and Natural Evolution of Life

Nature consists of matters. Biological world is diverse and colorful with coexisting organisms, superior or inferior, simple or complicated. In this integral world of living things, they correlate, restrain and depend on one another. Species in nature follows its own laws to move, evolve, develop and die in a distant long process of life evolution. Living organism keeps exchanging substance, energy and information with surrounding environment while keeps treating all these within its self to sustain its existence and development. It has to adjust and become sensitive and intellectual to survive.⁽²⁾ In view of entire living world, synergistic action plays a dominant role, for which "competition of survival of the fittest" is subordinate. Competition occurs only in certain circumstances of life evolution where coadaptation and coevolution among species and between living things and environment happen all the time.⁽³⁾

Natural holism proposed in *Huangdi's Internal Classic* (Huang Di Nei Jing) represents cognition of

©The Chinese Journal of Integrated Traditional and Western Medicine Press and Springer-Verlag Berlin Heidelberg 2012

*Supported by the Soft Scientific Project of Henan Province (No. 102400440059) and the Philosophy and Social Science Program of Henan Province, China (No. 2011FYY014)

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DOI: 10.1007/s11655-012-1170-3

unity and inseparability of the human and the natural-social environment where man lives in. TCM explores and studies man as a part of nature. It holds that man has the same origin as nature, and its image, essence and changes are closely related with nature. Nature endows human with near-perfect evolution. Accordingly in TCM physiology and pathology of human body are explored and researched in correlation with other living things in the world. The fundamental principle of TCM is respecting natural law that is from and back to nature.

TCM observes natural laws in accordance with natural movement and moving process. Both man and nature are constantly in alternation of movements and static states, both having states of normalcy and variability. In this way, the optimal state of man and natural evolution is being achieved, so is a homeostatic state of dynamic self-evolution, self-organization and self-balance, namely, a balance state between yin and yang. Under this dynamic balance state, man is capable of self-adaptation, self-construction of order and self-healing. This optimal state is the most ideal trend for matter variations and the most advantageous condition for human existence. Normalcy is essentially natural mode, which in this sense signifies more than natural world, laws, objects, substances, elements and natural phenomenon, but states of normality, stability and constancy, optimization and dynamic balance.⁽⁴⁾

Spontaneous Harmonization of Yin and Yang of the Human Body in TCM

Spontaneous harmonization of yin and yang is an important concept in TCM, concerning self-organization of human body, inner mechanisms of human survival, development, self-healing from illnesses and correspondence of man with nature. The concept also embodies operating mechanisms of the body in reaction and adaptability to the external world. Spontaneous harmonization of yin and yang is an interpretation of steadiness in yin-yang theory in ancient times, which views the human body in an open system to reveal the self-motion of yin-yang in the body and regulating mechanisms from angle of connecting, exchanging and dynamic state among things. It elucidates the best stable state that "yin is at peace and yang is compact with normal essence-spirit" is the self-motion result of the body. This kind of communication and dynamic state stresses on the processes.⁽⁵⁾ In addition, spontaneous harmonization of yin and yang contains a great many capacities including immunity, rejection, rehabilitation (healing and regeneration), endocrine regulation, stress response ability and coordination. Therefore, the concept

bears significant theoretical and clinical value.

The key in spontaneous harmonization of yin and yang resides in that the harmonization is spontaneous. Between them there is interdependence, mutual generation, inter-transformation and interaction. Although yin and yang are contradictory in nature, they are reciprocal in function and depend on each other for existence and development. It is in the movement of yin and yang that harmonization occurs. Internal mechanism influences and decides changes of yin and yang states; it is invisible but able to be adjusted. The external manifestations are the internal mechanism of yin and yang. Only by adjusting internal operation mechanism of yin and yang can their manifestations be changed. The operation mechanism hereof involves three aspects: respective operation mechanism of yin and yang based upon the principle—yin storing essence and yang being transformed into qi; interactive mechanism of yin and yang in terms of interdependence, mutual generation, inter-transformation and interaction; self-adjustment mechanism of yin and yang towards stimuli from internal and external environment. All the three mechanisms interact on one another and contribute altogether to general state of yin and yang. Therefore, the imbalance of yin and yang does not necessarily result from malfunction of a single but multiple mechanisms. Capable of self-organization, human body could spontaneously practise the function of movement, orientation, stability and independence. Whatever factors, leading to disease or cure of disease, have to undergo process of self-organization of yin and yang, through which conversion takes place manifested by illness or health, effectiveness or ineffectiveness to treatment. In short, spontaneous harmonization of yin and yang is a self-organization mechanism of human body, through which disease is germinated and cured. It aims to maintain optimal state of the human body through adjustment capacity of yin and yang.⁽⁶⁾

Modern Human Immunology and Human Endogenous Immune Function in TCM

In modern immunology three major functions of the immune system present: defense function, homeostatic function and monitoring function. Given comparison of modern immunology and TCM, defense function is similar to the function of healthy qi in eliminating internal pathogens and resisting external pathogens; homeostatic function is comparable to healthy qi in regulating yin-yang balance; monitoring function is similar to healthy qi in coordination of viscera and meridians, qi and blood to prevent phlegm retention and blood stasis resulting in "accumulation"

(tumor).⁽⁷⁾ In recent years a network theory of nerve-endocrine-immune system and their relationships have been proposed in biology, which illustrates correlativity and scientific sense of yin-yang theory of TCM with immunity.⁽⁷⁾

For example, long-term clinical effects have shown that reinforcing health qi to consolidate the body resistance is more than a simple support therapy. Its effect is achieved through adjustment of the physiological activities to make the inside environment improved, that is, "if healthy qi is sufficient, pathogenic qi can not invade the body easily". It has been reported that prescription for reinforcing health qi to consolidate the body's resistance has an action to regulate the human immune system, and it can increase or improve the immune status of the patient with deficiency syndrome.⁽⁷⁾

The recent-year studies have found that effect of eliminating pathogenic qi by reinforcing health qi on immune regulation may be related to the following factors: (1) regulating ratio imbalance in functions of TH1 and TH2 cells to suppress the hyper-response of immune system; (2) promoting macrophage phagocytosis to antigens so that more antigens can be eliminated to reduce further stimulation to the immune system; (3) facilitating production of neutralization antibodies to neutralize antigens so as to restrain the immune response; (4) inhibiting allergic transmitter release; (5) improving micro-circulation of blood and capillary permeability; and (6) regulating interactions of the nervous-endocrine-immune system.⁽⁷⁾

For instance, Qi, et al⁽⁸⁾ argued that Liuwei Dihuang Recipe (六味地黄方) has multiple medical effects inclusive of improving immunity, reducing blood sugar and lipid, protecting functions of the Liver (Gan) and Kidney (Shen), and preventing tumor. Its key pharmaceutical effect is to adjust the network of nervous-endocrine-immune system, which is the basis for the effect of nourishing Kidney yin in view of modern pharmacology.⁽⁸⁾ Another example is from Yang⁽⁹⁾ who made a review over progress in study on effect of medicines to warm and reinforce Kidney yang on immune molecular mechanism and gene regulation. The probe results showed that some Chinese medicinals could prevent damage to DNA, enhance its repairing capacity and improve stability by maintaining normal DNA expressions to adjust immunity on different levels. This is because sufficiency or deficiency of Kidney qi is in close relation with human immunity. The actions of this prescription to adjust immunity of organism have been proved by clinical and experimental practice.

Self-homeostasis of Human Micro-Ecological State and Balance Mechanism on Regulation Base in TCM

According to balance theory of medicine, human body composed of living cells possesses different content of electrolyte, organic acid and protein, which help maintain relatively stable physical and chemical conditions for human life system. This state is referred to as "self-homeostasis" in medicine. Self-homeostasis is a complicated dynamic balance maintained by various adjustment mechanisms in human body. On the one hand, the process of metabolism has broken relatively stable condition, and on the other hand, the rehabilitation of balance state has been achieved through adjustment. It is in such continuously disturbed stability and restoration of stability that human life activities are maintained and proceeded.⁽¹⁰⁾

Human body is essentially an entity of micro-ecological balance and life is essentially a process in which human being tries to maintain the micro-ecological balance state. Once the balance is broken by whatever factors internal or external, or the malfunction or failure of one link in the balance state, disease would come as a result. In this sense, the best way to cure disease is to restore the inner body's balance.⁽¹¹⁾

For instance, according to pathology for thrombus, the dynamic balance between blood clotting system and anti-clotting system ensures not only potential clotting of blood but also the liquidity of blood. However, if the balance is destroyed under the effects of clotting accelerating factors to trigger the blood clotting process, blood would coagulate in the vessels forming thrombus.⁽¹²⁾ Another example is germination of cancer. Researches on molecular biology showed that the germination of cancer is related with proto-oncogene and tumor suppressor gene in normal cells. In the case that proto-oncogene is activated into oncogene or expressed in abnormal ways, or tumor suppressor gene can not accomplish its adjusting growth and stopping differentiation task; cancer is probably germinated.⁽¹³⁾

The fundamental principle for TCM treatment is to establish a complete organic system based on "reinforcing healthy qi to eliminate pathogenic factors", mainly characterized by adjustment as a root to achieve a balance. To realize this goal, a great many means are employed including theories, methods, prescriptions and medication, and they are combined in a harmonious way. Cure of disease by TCM does not depend much more on medication for directly combating pathogenic factors

than adjusting functional state of organism to improve the body's anti-disease capacity. In practice, imbalance state is analyzed and adjustment measures are taken to regulate visceral functions and increase the body's immunity. In this way, the healthy qi could be restored and diseases be cured. The following is a good case in point. In the late 1950s and early 1960s, acupuncture was applied in some hospitals in China to cure some groups of acute bacillary dysentery. The therapy brought phagocytosis of white blood cells and lymph cells into full play to improve the human self-capability to combat disease without administration of antibiotics. The example demonstrated effectiveness of TCM in improving anti-disease capacity of human body.⁽¹⁴⁾

In addition, TCM emphasizes differential diagnosis and treatment in combination with the patient's individual differences and prevention of diseases. It aims at constructing a health system by integration of medical treatment and medication based on syndrome differentiation. It tries to make a timely adjustment in the quantitative changing process of disease so that malign changes could be prevented or deferred. Treatment of disease in TCM is finally fulfilled by restoring original orderly state, structure and function through self-adjustment, and maintaining balance in imbalanced state.⁽¹⁵⁾ In the long run, self-adaptability and self-organization of human life system are preserved.

Adaptation—Eternal Theme of Biological Evolution and Safeguarding Adaptability—Value of TCM

Human body is a complicated multi-cellular organism. Multi-cellular organism adjusts itself on the basis of cell's intelligence. Cells possess structures to sense changes of surrounding environment; sensory protein of cells could sense, integrate and process environmental information by information system within cells, which indicate cells have established complete feedback mechanism with environment and can make suitable reaction to external changes beneficial to existence. Life evolution is essentially an optimization process of existence efficiency; species with higher competition efficiency is able to gain more chances of existence. The process of evolution of complicated multi-cells is the one of coordination of "individual interests and community interests" through which adjustment mechanism of stable time and space is formed and kept in a dynamic balance. Such original coordination mechanism would be broken in case of any mistake in space or time adjustment, leading to germination of disease.⁽¹⁶⁾

Adaptation of organism has two meanings: structure of organism is adapted to certain function; structure and function of organism are adapted to existence and evolution in certain conditions. Adaptation is a universal natural phenomenon in biological world. The present organism deriving from a long term natural selection is capable of adapting itself to environment. Acted by negative entropy difference between the environment and living things, the environment provides negative entropy — energetic power for the organic adaptive evolution through the DNA and RNA. In evolution, the driving force is the negative entropy flow engendered by negative entropy between environment and living things; genetic factor is a guarantee; the variation caused by adaptation is a foundation, and modification due to environment is the premise.⁽¹⁷⁾

Human being is a result of natural selection. In nature, there has been constant exchanges of matter, energy and information between human and nature in conditions of different movements, climates and geographical locations, to which different individuals respond differently. The external uncertainty is attributed to environment while the internal uncertainty to the body's self orderly and disorderly states. Self-adaptation of complicated human body plays a significant role in orderly operation of the self-organization. In TCM, in the process of "reinforcing the healthy qi to eliminate pathogenic qi" and "syndrome differentiation and treatment", the indicated therapies and prescriptions are given according to ages, genders and physiques of individuals. In addition, time, geographic and climatic factors, waning and waxing of yin and yang are also taken into consideration. Such treatment is referred to as four dimensional adaptation in this study, which includes time, space, environmental and individual adaptation. That's why TCM pays more attention to invigorating functions of all body organs, the harmony and coexistence of human and ecological world and nature. Natural perspectives on disease and health and natural intervention in TCM are not isolated but comprehensive. TCM exerts direct, indirect, profound, potential, natural and rational actions on human body. It could be expected that, with this rational natural intervention, a stable biological state in human, ecological and micro-biological world could come into being.⁽¹⁸⁾

Safeguarding Homeostatic Evolution of Human Beings

During 100 years of development, modern medicine has witnessed tremendous achievements; meanwhile, human desire for conquering disease has been surging and medical intervention overflowing prominent by the

antagonistic intervention. Intervention has gradually evolved into medical "core". According to this idea of value orientation, excessive medical antagonistic intervention can hardly be avoided, and become a normalcy. Human beings have to be frequently subjected to chemical damage and impact, and life activities are brought back to normality and balance usually in a mandatory and formal way. Is it likely that the body's self-regulation capacity, adaptability, self-repairing and recovery ability are continually injured to some degree? Truly technological innovation through biomedical revolution can cure diseases and prolong life, meanwhile a paradox of many difficulties could arise. The situation is not seldom seen as "medical treatment following disease and some new resultant disease following treatment". Sometimes afflicted longer life is accompanied by more pain, more illnesses and more expensive cost, physically, mentally and financially.

Intervention in and being subject to intervention hold a natural relation with nature and man. Medical behaviors could tend to be more optional, nonantagonistic, adjustable, inducible to self-recovery. There should have been reasonable limits to medical intervention in order to achieve optimal therapeutic effects and preserve long term human self-adaptability in the same time. Medical circle should attach more importance to social value and homeostasis of biological evolution, consciously integrate the both and take care to maintain human self-healing system. Anything with casual or excessive intervention, interference and antagonization should be avoided.

In 2011, the author of this study proposed the concept of Hehe medicine⁽¹⁹⁾ on the basis of Chinese Hehe philosophy that "integration and harmony of diversity can give birth to something new". Hehe medical system consists of preventive treatment and biomedical-psycho-social treatment, characterized by the dual intervention of health care and medical treatment to self-adaptation. This system is based on integrated TCM and modern medicine. The core elements of Hehe medicine are preventive treatment, elimination of pathogens by strengthening healthy qi and maintenance of human self-adaptability to gain restoration and attainment of health cycle of human being.

In an overall view of TCM, the optimal ways are to practice preventive treatment of disease, reinforce the healthy qi to eliminate pathogenic qi, promote the development of endogenous defense function, spontaneous harmonization of yin and yang, and self-healing mechanism, maintain the adaptation and harmony

of inner body with external environment, including adaptation to impact of pathogenic factors and unfavorable natural conditions. These options by TCM accord with natural evolution laws, that is, coming from nature and returning to nature. In consequence, the human body, through the self-adjustment and recovery of healthy qi, resumes its original state and the original order, structure and function. In great variety of conditions, simplicity and complexity, necessity and contingency, order and disorder, stability and change, competition and cooperation, adaptation and exclusion, heredity and evolution, TCM theory and practice play an active and effective role in human evolution. Therefore, TCM theory and practice are in accordance with human evolution law, the biological evolution law of "use and disuse".⁽²⁰⁾

"Genetic substances will degenerate or fade out without use for a long time; that is to say, as their functional traits can not be expressed in a long time, their entropy is inevitably greater than or equal to zero. Only the genetic substances in frequent use can obtain negative entropy continuously from the environment, and constantly refresh to be adaptive to the environment and gain the driving force of evolution".⁽¹⁷⁾ The essence of biological evolution is the organism performs the self-regulation of its own survival state in order to adapt to the environmental changes. The biological evolution of spontaneous laws are termed as the adaptive function (self-adaptation function) which demonstrates the negative entropy function outside the biological system.⁽²¹⁾

TCM is committed to establishment of health care and intervention mechanism featured with the early, lifelong intervention and conforming to nature based on self-healing of the human body. The starting point and target of TCM researches and treatment are demonstrated by the following aspects: dynamic balance between man and nature; coordinative function and homeostasis system of the human body; integrative adaptability of human being, psychological, social and natural environment; sound adjustment and response of the human body to outside interference; interaction of the integral human system and environment; comparative stable relationship among the human being, natural system, mutual dependence in manner and order. Owing to endeavors of medical practitioners of successive generations for a few thousand years, TCM theories and medical practical therapies have been established, with which intervention in the human body is implemented in direct, or rather more indirect, non-antagonistic and inducing regulatory

manner. All these have consciously and unconsciously maintained adaptability of human to diseases and nature. It can be concluded that, based on TCM theories and medical practical therapies, maintenance of human being's adaptive capacity and self-adaptive capacity has positive correlation with human homeostatic evolution.

Significance to Verify the Positive Correlation between TCM and Human Homeostatic Evolution

Human beings have strong will to survive, hence, the selected way to realize this aspiration has become primarily important. In order to sustain human growth, health and reproduction, every possible means of modern science and technology is taken to fight against human diseases or enhance the body's immune function. However, if they are used in an improper or excessive manner, the results might violate original intention. Although TCM is in the domain of natural science, it is not pure natural science in a modern sense. Because it is integrated with ancient Chinese philosophy and historical culture, it has attributes of social humanities. The theoretical system of TCM is characterized by integration of natural-philosophical-medical-social features, in which human is taken as an inseparable part of nature and society, and so is human health or disease. This is concept of holism of TCM. Based on the medical perspective, the intention to verify the positive correlation between TCM and human homeostatic evolution might contribute to revitalization of TCM core value. This core value is the origin of TCM in scientific sense and a root of a few-thousand-year life of TCM still in flourishing. The exploration here might be constructive to a more profound understanding of the connotation of natural-philosophical-medical-social attributes of TCM theoretical system. In a long run, it might promote the inheritance and development of TCM, gradually changing the complementary and alternative status of TCM in society. Every effort should be made on returning to harmonious coordination between human and the living environment in the evolutionary process, maintaining human health, reproduction and survival to realize the health cycle in the sense of human natural evolution.

Acknowledgement: The author is grateful to Prof. ZHANG Lei, Prof. WU Xiao-yin, Mr. Wu Rui-xiang (PhD) and Mr. WU Kai-zhen for their academic help in discussion and material supply.

REFERENCES

- Zhou GZ, ed. Scientific character. Xi'an: Shaanxi Normal University Press; 2003:135-138.
- Liu CQ, Hou YH, Liu SZ, Feng YG. Complex living systems—the self-organization systems in the involution field. *J Syst Sci (Chin)* 2007;15(4):49-50.
- Wang DL, Gao Y. Competitive evolution and coevolution. *Chin J Ecology (Chin)* 2005;24:1184-1186.
- Xie YJ. The essence and theory of Laozi's concept of "Ziran". *J Hunan Univ (Soc Sci, Chin)* 2009;23:22.
- Wang CY, Zhao Y. On self-homeostasis of yin and yang and homeostatic theory of traditional Chinese medicine. *Shandong Univ Tradit Chin Med (Chin)* 2003;27:104.
- Zhu SN. "Spontaneous harmonization of yin and yang"—a law of yinyang in the human body on deeper level. *J Shandong Coll Tradit Chin Med (Chin)* 1996;20(3):150-151.
- Yang LQ. Immunology and pathogenic biology. Beijing: China Press of Traditional Chinese Medicine; 2006:110-113.
- Qi CH, Zhang YX, Shen BF. Advances in study on modern pharmacology of Six-ingredient Rehannia Pecepe. *Bull Acad Milit Med Sci (Chin)* 2002;26:57-60.
- Yang DD. Progress in study on effect of medicines to warm and reinforce Kidney yang on immune molecular mechanism and gene regulation. *Jiangsu J Tradit Chin Med (Chin)* 2004;25(7):59-60.
- Chen ZC, Liu XR, Wang DW. The self-organization mechanisms of the human life system. *J Syst Dial (Chin)* 1996;4(4):66-67.
- Liu Q, Liu XL, Lu JH, eds. Guiding book for teaching an introduction to dialectics of nature. Beijing: People's Education Press; 2005:64.
- Wu ZB, ed. Pathology. 4th ed. Beijing: People's Medical Publishing House; 1998:52.
- Li H, Li DX. Traditional Chinese medicine basic theory and advance in modern medicine. *Liaoning J Tradit Chin Med (Chin)* 1997;24(7):294.
- Zhang YH. Kilter medicine—a contemporary concept of traditional Chinese medicine. *Med Phil (Chin)* 1999;20:7-9.
- Ju BZ, Zhang YM. The concept of system in traditional Chinese medicine: seeking the root in treatment of disease. *Med Phil (Chin)* 2001;22(11):18.
- Yu XB. On the evolutionary mechanism of multicellularity. *Chin J Nature (Chin)* 2007;29(3):168-172.
- Cao JS, Zeng GW, Miu Y. On organic adaptive evolutionary theory and its molecular mechanism. *Explor Nature (Chin)* 1997;16(4):53.
- Kang L, ed. Restoration and reconstruction of degraded ecosystem: perspective in contemporary ecology. Beijing: Science Press; 1990:304.
- Wang JH. Initiating Hehe medical system of traditional Chinese medicine and biomedicine to realize health cycle of human beings. *Chin J Integr Med* 2011;17:945-949.
- Fu SB, ed. Medical biology. Beijing: People's Medical Publishing House; 2008:125.
- Yuan NJ, Liu Z. Self-adaptation function as a spontaneity criterion for evolution of biological system. *J Tsinghua Univ (Sci Tech, Chin)* 2003;43:1304-1308.

(Received November 11, 2011)
Edited by WANG Wei-xia