

# Integrative Cardiovascular Chinese Medicine

A Prevention and Personalized Medicine Perspective

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Medicine Perspective

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# Holism

## Chapter Objectives

After studying this chapter you should be able to:

1. Describe the aspects of yin and yang, essence, qi and blood as they contribute to normal health
2. Explain the five-element cycle as evidence of yin and yang characteristics in nature, its correspondence to body organs and the normal and pathologic cycles
3. Describe the anatomy and pathophysiology of the heart and the interrelationship with other body organs according to Chinese medicine and Western medicine
4. Outline the base model for holistic medicine as it relates to the roles of the health practitioner and patient
5. Determine practitioner characteristics in humanistic medicine
6. Summarize the context for holism in personalized medicine

## OVERVIEW

This chapter briefly explains the holistic basis for the development of integrative cardiovascular Chinese medicine. The purpose is to bridge specialized patient responsibility, with a specialized means for personalizing medicine and health care. The basic theories, medical sciences and scientific principles of traditional Chinese medicine (TCM) and Western medicine blend to construct the three main aspects within this system.

The first aspect includes the perspectives of the human body. In both TCM and Western medicine, the organs/viscera and organ systems are interconnected and interdependent. In TCM the opposing aspects of yin and yang are used to describe the intricate and delicate balance of physiologic properties and biochemical products which function to maintain homeostasis. In addition, TCM describes the specific and inevitable characteristics of earthly elemental resources and the forces of nature during the four seasons. The human body

must adapt to these environmental factors through dietary and lifestyle choices, or face pathologic consequences which match those factors.

The second aspect focuses on the interconnection between the cardiovascular system and other organs/viscera. In TCM, the heart functions in a cycle with the spleen, lungs, kidneys and liver – which are collectively called the zang organs/viscera. Using the imagination, their vital and pathologic functioning symbolically relates, respectively, to the characteristics of the earthly elemental resources of fire, earth, metal, water and wood. The story of the relationship dynamics between the zang organs is then explained in detail through the normal and pathologic cycles. The theories of yin and yang, essence, qi and blood explain their importance as ‘vital substances’ in the innate development, physiologic functioning and aging milestones of human life. The vital substances are also factors that drive the cycles among the zang interrelationships. The zang organs and their interrelationships are described in the theories of the five elements. In Western medicine, the cardiovascular and other organ systems provide most of the biochemical and processing requirements for the entire body. As the zang viscera relationship is described in TCM, in Western medicine the relationship between the viscera is expressed through the results of movement of blood, nutrients, biochemicals and other substances through the vessels. The results are tangible symptoms and signs experienced under the influences of illness, recovery and vitality, and palpable on physical examination.

The third major aspect includes the practical aspects of holism. The patient has a direct responsibility towards his or her own well being. In this context, competency can be seen in their mental outlook, lifestyle choices and outward behavior. An actively responsible patient can thrive on prevention practices with guidance from health practitioners, and, when necessary, they can be recruited to cooperate in a treatment plan for recovery. The holistic practitioner’s primary role should be as humanistic guide and consultant, with a minor role in intervention and recovery. The knowledge, skills and behaviors are often influenced by the scientific principle and reductionist practices, no matter what the system of medicine. Harmonious collaboration between patient and practitioner can assist in the development of personalized medicine.

## Key Points

- The five zang viscera are yin types because they store qi, blood and essence. These include the heart, lungs, spleen, kidney and liver.
- The theory of the five elements in Chinese medicine can be considered as medical evidence of yin and yang theory. The natural elements correspond symbolically to matters in health state, promotion and disease manifestation.
- The brain is connected to the heart, and the marrow promotes clear thinking, speaking, emotional and psychologic stability. It governs the qi action for heart animation, motivates all zang organs in the production of qi, blood, body fluids, biochemicals and other substances for life functioning.

It works together with innate essence to nourish the zang and fu viscera and other tissues.

- Qi is the basic energy for life activity, which animates existence and promotes the physiologic function and metabolic processes. There are four types of qi: primordial, pectoral, nutritive and defensive. The brain absorbs these and generates qi for nerve signaling and regulation of senses, excretion and the conduction system.
- The heart shares a relationship with the spleen, liver, and lungs in the production and circulation of blood. In the relationship between heart and spleen, the spleen generates and controls the blood and the heart governs its circulation. The heart and liver share a relationship concerning blood. The heart circulates the blood and the liver stores and regulates the flow. The heart and lung relationship concerns the movement and circulation of blood.
- The heart qi motivates the circulation of blood, and lung qi purifies it with fresh air; respiration also assists with circulation.
- The heart and kidneys share a relationship of the dependence of essence and water (yin) on spirit and fire (yang).
- The heart intrinsically pumps and circulates blood and other substances throughout the closed circulatory system at the average rate of 70–80 beats/minute. The conduction system of the heart is the source of heart qi which regulates the movement of blood, the dilation and contraction of the vessels and the transmission of the pulses.
- In Chinese medicine, the heart has the physiologic functions of governing blood and dominating blood vessels, and the psychologic function of housing the inner spirit, which is associated with mental activity and the emotion of joy.
- The heart and liver share a relationship concerning blood and the mind. The heart governs and dominates brain activities of emotions, intelligence and psychology. The liver governs the free flow of qi which is necessary for the smoothness of emotions, blood and the mind. If the heart blood is deficient and the liver fails to smooth the free flow of qi, then emotional and psychologic issues will appear with symptoms such as depression, irritability and hair-trigger anger.
- A base model for integrative cardiovascular Chinese medicine is to blend the scientific method and reductionist perspectives to cultivate objective holistic medical practices that collaborate with a healthy patient mental and lifestyle choice.

## PERSPECTIVES OF THE HUMAN BODY

### Yin and Yang Theory

In TCM, yin and yang theory describes the basic opposing aspects within the structures and functioning of the outer universe (heaven) and surrounding nature (earth). The yin and yang symbol is a circle with one half dark,

representing yin; the white half represents yang. Within the dark yin half is a small circle of white and within the yang white half is a small circle of black. They represent the potential for balance through interdependence, mutual restriction, reciprocity and mutual transformation. Examples of yin attributes include earth, entering, descending (lower), darkness, coldness, dampness, femininity, yielding, static, internal, material formation. Examples of yang attributes include heaven, exiting, ascending (upper), illumination, warmth, dryness, masculinity, reaping, moving, external and immaterial.

### *Yin and Yang in Nature*

The daily attributes of yin and yang are experienced in a 24-hour cycle and during the four seasons of the year. In a 24-hour cycle, the day begins with the interdependence of yin and yang as the moon descends and the sun ascends. With the transit of the sun across the first half of the sky in the morning and early afternoon, the day becomes brighter and yang is dominant. With the transit of the sun across the second half of the sky in the late afternoon and early evening, the day becomes dimmer as yang brightness transforms with a touch of yin darkness. As the sun sets and yang descends, yin ascends. With the transit of the moon across the first half of the sky in the evening and night the day becomes darker and yin is dominant. The phases of the moon can be characterized as yang for the waxing cycles and yin for the waning cycles. With the transit of the moon across the second half of the sky in the late night and early morning the sky becomes dimmer, as yin darkness transforms with a touch of yang brightness. As the sun rises, a new day begins with a mixture of yin darkness and yang light. It is interesting that pregnant mothers have Braxton–Hicks contractions or go into labor during full moon cycles. Also, minor and serious illnesses, myocardial episodes and death seem to occur between the late night and early morning.

During the 12 months of the year, especially in geographic locations where there are four seasons, examples of mutual yin and yang restriction and reciprocity can be easily noticed with the transitions in nature. The first quarter of the year begins with the yin coldness of winter. As spring emerges, the yang energy restricts the coldness to transform into warmth, which is optimal for gestation of life. During the second quarter of the year, yang energy gradually dominates as spring warmth transforms into the heat and flourishing of life in the summer. During the third quarter of the year, yang energy is restricted by yin which cools summer heat and prepares for the reaping actions of the fall. In the fourth quarter of the year yin gradually dominates into dormant winter. It is interesting that heart problems are exacerbated during winter and summer months.

### *Yin and Yang and the Human Body*

In medical science the human body is divided into anterior and posterior, proximal and distal, superior and inferior, internal and external, internal organs,

tissues and their physiologic functioning. All can be correlated with yin and yang attributes. For example, in Chinese medicine, all the organs of the trunk are divided into yin and yang types and are called zang and fu viscera (organs). The five zang viscera are yin types because they store qi, blood and/or essence. These include the heart, lungs, spleen, kidney and liver. The six fu viscera are yang types because they transport and transform food nutrients and waste products for distribution and excretion. These include the small intestine, large intestine, stomach, urinary bladder and gall bladder and the san jiao. Other organs, such as the brain, lymphatic, endocrine and reproductive organs, have a special connection in this interrelationship. Each zang and fu viscus has yin and yang aspects as related to their position in the body, their anatomic structure, physiologic function and interrelationship with other body organs. They also have a holistic matching relationship. The heart zang is matched to small intestine fu, the spleen zang is matched to stomach fu, the lung zang is matched to large intestine fu, kidney zang is matched to bladder fu, and liver zang is matched to gall bladder fu. Within each viscus, physiologic functioning is primarily yang, with subfunctioning within organs and organ systems which can be both yin and yang according to relationship. Biochemical products – such as hormones, enzymes, metabolites, pigments, vitamins and minerals, sugars, ketones, polysaccharides, proteins, fats, body fluids, blood, etc. – are primarily yin. They also have subproperties which can be classified as yin or yang according to their pH, concentration, mechanism of action and activation of vital physiologic functioning of organs and tissues.

## **PATHOLOGY: VITAL QI VERSUS PATHOGENIC QI**

Vital qi is an energetic health state of the body, which is associated with yang. Important tissues, structures, fluids, biochemical products and all of their functions move within their unique yin and yang cycles to maintain homeostasis. As the body is constantly evaluating the ability to resist or endure and recover from an attack of disease, maintaining the balanced level of the yang energetic state is crucial (see [Fig. 1.1](#)). It depends on sufficient levels of yin substances, such as blood, body fluids, vitamins, minerals, other nutrients and biochemicals, which nourish and protect proper levels of yang so that neither is depleted. Pathogenic qi is considered an invasive factor in the health state where lowered immune resistance leads to health deterioration. It is also divided into six factors according to yin and yang: yin pathogenic factors are coldness and dampness, while yang pathogenic factors are wind, dryness, heat and fire. It moves from the outside to the inside, penetrating the first line of defense to move towards the second line. Changes in weather, seasonal allergies, epidemics/pandemics, sexually transmitted diseases, etc. are examples of pathogenic qi. In a very basic sense, the severity and magnitude of the pattern in which pathogenic qi attacks and affects the body is from extreme yin (cold)



FIGURE 1.1



FIGURE 1.2

to extreme yang (fire). Over time, untreated or under-treated exogenous pathogens can cause organ damage and organ failure.

When yin is deficient and unable to restrict the action of yang, the result is a yang excess (as shown in Fig. 1.2). The pathogenic factors are characterized by a diminishing of moisture and nourishment of the tissues and organs, resulting in fluid deficiency and dryness. The therapeutic principle is to restore balance by nourishing yin and stabilizing or subduing yang.

When yang is deficient and unable to restrict the action of yin, the result is a yin excess (as shown in Fig. 1.3). The pathogenic factors are characterized by fluid retention and inability of the body to maintain warmth. The therapeutic principle is to restore balance by stabilizing or reducing yin while warming and tonifying yang.

When the vital qi is damaged, both yin and yang are deficient (as shown in Fig. 1.4) due to the excess demands of mutual restriction. Yin is damaged because of the inability of yang to warm and create a steaming effect to



FIGURE 1.3

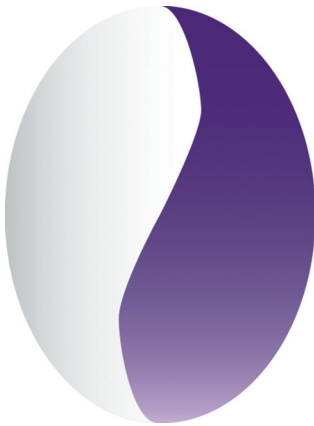


FIGURE 1.4

cause a kind of condensation which assists in producing fluids. Yang is damaged because of yin's inability to reciprocate by sharing the fluids to nourish and regulate yang levels. The therapeutic principle is to nourish yin while tonifying yang.

## FIVE-ELEMENT THEORY

The theory of the five elements in Chinese medicine describes the activities of yin and yang as they are found in nature (Table 1.1). Each element is characterized by its personal attributes, which are coincidentally noticed in the health and pathologic states in humans. The patient and holistic health care practitioner can adapt this system to personalize the diet, make lifestyle adjustments and create a treatment plan.



TABLE 1.1

Element	Element Characteristic
Fire	Warmth, heat, flaring upwards
Earth	Yielding, receiving, creating, generating, sowing and reaping
Metal	Descending, astringing, clearing, changing
Water	Moistening, coldness, flowing downward,
Wood	Flexibility, strength, flourishing, developing upward

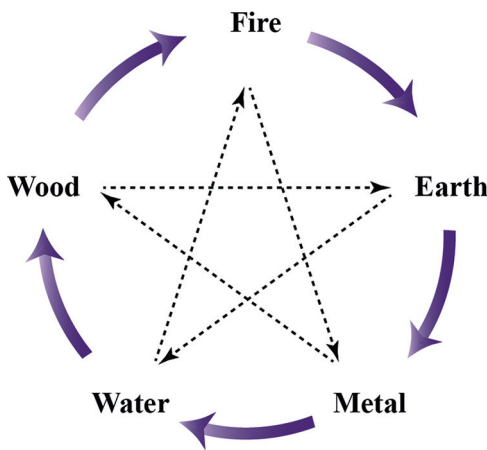


FIGURE 1.5

### Normal Cycle

The normal cycle represents balance and harmony among the elements (Fig. 1.5). One element helps with the development of another through promoting or restricting. Two aspects within this are the mother and child promoting cycle and the grandmother and grandchild restricting cycle. In the promoting cycle, the fire mother warms and transforms the earth child, the earth mother generates and nourishes the astringent property of metal child, the metal mother nourishes the nutrient fluid properties of the water child and the water mother nourishes the flourishing growth of the wood child. The restriction cycle is an authority and subordinate cycle which is also called the grandmother and grandchild cycle. One element restricts the actions of another as a means of reinforcing the promoting cycle. The wood grandmother restricts the over-expansion of the earth grandchild, the fire grandmother restricts the over-astringency of the metal grandchild, the earth

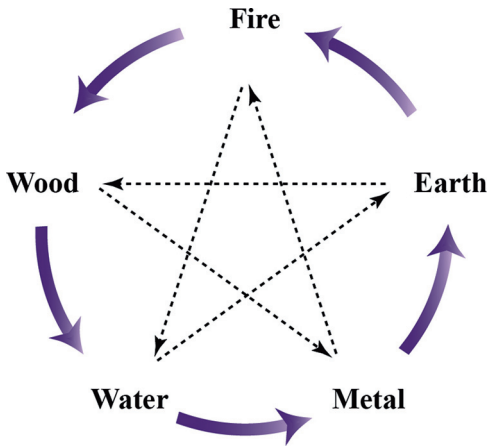


FIGURE 1.6

grandmother restricts the over-flow of the water grandchild, the metal grandmother restricts the overgrowth of the wood grandchild and water grandmother restricts the flaring blaze of the fire grandchild.

### Pathologic Cycle

The counter action and violation cycles are pathologic states. An imbalance between two elements anywhere in either of the two cycles triggers a domino effect of failure within the entire five-element cycle. In the counter action cycle the child element becomes excessive, uncontrollable, and then turns on the possibly deficient mother element. For example, the blazing fire child burns the wood mother to ashes (see Fig. 1.6). The overgrowth of the wood child consumes all of the nourishing water mother, the water child floods and corrodes the metal mother, the excessive metal child poisons the earth mother, the over-generating earth child smothers the fire mother.

In the violation cycle, the insubordinate grandchild element becomes excessive and overpowers the grandmother element. The over-generating earth grandchild swallows the flourishing control of the wood grandmother. The blazing fire grandchild dries up the moistening control of the water grandmother. The over-flourishing wood grandchild depletes the nutritionally astringent control of the metal grandmother, the over-flowing water grandchild floods out the earth grandmother.

## ESSENCE, QI, BLOOD AND BODY FLUIDS

### Essence

Essence is described in two aspects which include the innate from genetic factors and the acquired from lifestyle choices of nutrition.

First, there is innate essence – which is inherited from the parents during the process of meiosis after conception. The level of thriving energy of the developing embryo becomes the inner drive and spirit which mixes with, and strengthens, the innate essence to motivate survival in the fetus during the gestational period to birth. The lifetime supply of innate essence is then stored in the kidneys after birth to assist with further development. Between adolescence and adulthood, the essence develops into tankui which brings puberty and prepares males and females for adulthood and as potential genetic donors to offspring. Essence also nourishes the brain and the bones. It bathes in the fluid around the brain and spinal cord to promote clear thinking, speaking, emotional and psychological stability. In the bones and teeth, it helps to form marrow, and provides sufficient nutrients, strength, flexibility and durability. In addition, marrow in the long bones is the source from which blood is produced.

Secondly, acquired essence is made up mostly of water and gastric enzymes mixed with vitamins, minerals, carbohydrates, amino acids and other nutrients derived from the consumption and digestion of food. It travels in the bloodstream as nourishment and balances the maintenance of other biochemical mechanisms. Also, it assists the innate essence around the brain and spinal cord. Acquired essence is crucial for supporting life.

Deficiency of congenital essence results in cognitive and developmental disabilities in the fetus and infant. Deficiency of kidney essence during adolescent development results in poor intellectual ability, forgetfulness, dizziness, and a weak and unhealthy body constitution. During the phase middle age to senior adulthood, essence deficiency results in kidney deficiency and diminished brain functioning in the stages of senility. Acquired essence primarily becomes the substance which is transformed into the qi of the body – which provides energy for tissues, organs and physiologic functioning.

## Qi

Qi represents the basic energy which animates regular life processes and is created partially from acquired essence. Qi warms, like yang energy, and spreads blood to moisten the skin surface to allow anti-pathogenic qi to remain on active duty. Qi also assists in maintaining the peripheral body temperature, proper physiologic functioning, internal blood circulation and secretion of body fluids. When this qi is abundant, the body can maintain normal body temperature levels. Temperature regulation is also involved in the normal body transformations. Food is divided into clear and turbid. The clear food, as nutritious substances, transforms into catalysts for metabolic reactions. Turbid substances include indigestible food components and waste synthesis of biochemical products. There are four types of qi: primordial, pectoral, nutritive and defensive.

Qi moves in four directions. Two of the directions are related to the motion of creating the acquired qi. Entering motion moves qi from the exterior to the interior – such as fresh air into the lungs to become lung qi, and processed food

from the stomach to duodenal and small intestinal absorption to become nutritive qi. Once acquired essence from food mixes with acquired qi from breathing in air, the transformation into qi occurs in the vessels, and the blood carries all necessary nutrients and substances to the organ systems in the body. The other two directions are related to the normal movement of the qi once it animates zang or fu viscera. Ascending motion moves qi from the lower parts of the body to the upper parts, such as liver qi and spleen qi. Descending motion moves qi from the upper parts to the lower parts such as in heart qi, lung qi, stomach qi, small intestine qi, large intestine qi and bladder qi. According to the zang or fu viscera or organ system, qi provides the animation to perform six functions: to defend, control, propel, warm, nourish and transform.

- (a) *Primordial qi*. This qi is really the action of innate essence as it activates development between puberty and adulthood.
- (b) *Pectoral qi*. This qi is acquired by breathing fresh air into the lungs, and nutritive qi is acquired from food. It accumulates in the thorax region, the sea of qi area, and moves through the lungs and heart through blood circulation. It functions to promote and support the actions of the primordial qi, to move the lobes of the lungs, and to circulate the blood.
- (c) *Nutritive qi*. This qi is the nutrition formed from food essence. It assists in the generation and production of blood, then circulates the blood to nourish the tissues, organs and organ systems.
- (d) *Defensive qi*. This qi is a yang action, also called anti-pathogenic qi. It is created from pectoral qi and nutritive qi. Defensive qi protects the body, controls the temperature and the secretion of sweat. It spreads around the body by first circulating over the body surface to warm the skin and hair to make them lustrous. Next, it moves to the interior to contribute to the immune system and organ system activities. Anti-pathogenic qi is the motivation for the immune system, especially for the first and second line of defense. Various lymphocytes and leukocytes react with and kill microbes.

When this qi is healthy and abundant, the body is able to defend itself and prevent illnesses, or to recover quickly should an illness occur. When this qi is deficient, the immune responses become delayed and eventually diminished, causing exposure to infection.

- (e) *Controlling qi*. Controlling qi functions to regulate the discharge and retention of fluids. It allows opening and closure within the sphincters of hollow organs to adjust the rate of secretion of urine and feces. It controls dilation and contraction of the cervix for menstruation and childbirth, skin pores for secretion of sweat, valves in the blood vessels for blood flow, and glands for saliva and semen. Deficiency of this qi will lead to profuse sweating, hemorrhage, hypersalivation, spermatorrhea and nocturnal emission, leukorrhea, incontinence, diarrhea due to rectal prolapse, irregular vaginal bleeding or menstruation and miscarriage.