

## Short Review

# The Chinese Medicine Theory is for Real: A Short Review on the Book “The Mapping between Traditional Chinese Medicine and Signalling Molecules”

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## Introduction

This article briefly reviewed the book “The mapping between traditional Chinese medicine and signalling molecules” recently published by Cambridge Scholar Publishing [1]. This book proved that Traditional Chinese Medicine (TCM) describes the same physiological processes in human as modern medicine but using different terminology, and revealed the scientific basis of TCM.

## Identified the Mappings

Traditional Chinese Medicine (TCM) has been applied in China and East Asia Countries for thousands of years. TCM considers that there exist vital substances in human body to regulate the physiological processes, for example, Qi, Yang Qi, Yin Qi, etc. The TCM diagnosis and therapeutic strategies are all based on the functions and interrelationships of these vital substances. The fundamental doctrinal source for TCM is “Yellow Emperor’s Inner Canon” (YEIC, 黄帝内经 Huangdi Neijing) [2]. YEIC is the conversations between Yellow Emperor and Wise Men, and cover a broad range of topics, such as causes of various diseases, functions of meridians, treatment strategies, functions of TCM vital substances, etc.

In modern medicine, signaling molecules are the fundamental substances in human body, and the cascades of molecular signaling pathways trigger a series of physiological activities of human body.

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TCM and modern medicine use different terms but describe the same physiological functions in human body, and there should exist mappings between TCM and modern medicine. To find the mappings, the author searched each TCM vital substance in YEIC, and listed their physiological functions and interrelationships; then searched the signaling molecule that could match these physiological functions. The author identified 48 mappings between TCM vital substances and signaling molecules, as shown in table 1. For each mapping, the physiological functions are the same; the interrelationships among different TCM vital substances are also the same as the signaling pathways of corresponding molecules; the specific TCM herbal medicine have the same effect on this TCM vital substance and corresponding molecule. studies have shown that PK has many pharmacological effects, such as immunomodulation, hypoglycemic, antioxidant, anti-fatigue, anti-pathogenic to microorganisms, anti-inflammation, protection of myocardial cells and liver, and more [3-5].

## Molecular Mechanism of TCM Strategies to Treat Arthritis and Diabetes

By applying these mappings, the author also analysed the TCM causes of arthritis, diabetes, and constipation and their corresponding TCM treatment strategies, and demonstrated that the molecular causes of diseases and treatment strategies between TCM and modern medicine are the same.

To treat arthritis, TCM targets Cold (IL-1), Damp (IL-6), Wind (NF-κB) and Heat (TNF-α), which are consistent with the strategies of modern medicine [3,4]. IL-1, IL-6, NF-κB and TNF-α are inflammatory cytokines. TCM used herbal medicines not only to inhibit these cytokines directly, but also to decrease these cytokines by regulating other molecular pathways. For example, TCM decreases Wind (NF-κB) via increasing Blood Qi (Iron) [5], and inhibits Cold (IL-1) via increasing Kidney Yang (Calcitonin) [6], etc.

To treat diabetes, TCM targets Consumption (FoxO1) which is consistent with clinical and biological experiments [7]. Particularly, TCM used Liuwei Dihuang Pill to treat diabetes [8], that could increase Consumption (FoxO1) [9,10], Yin Qi (Potassium), Genuine Qi (Phosphorus) and Kidney Yin (Wnt) [1,11] and decrease Yang Qi (Calcium) [1]. These TCM strategies are the same as those of modern medicine [12-15].

In general, this book revealed that TCM theory is for real and describes the same physiological processes as modern medicine does but using different terminology.

TCM vital substances	mapping molecule	TCM vital substances	mapping molecule
Essence (精)	Tyrosine	Liver Qi(肝气)	GSH
Mind (神)	Melatonin	Liver Yin(肝阴)	SOD Renin
Ethereal Soul (魂)	Serotonin	Liver Yang(肝阳)	HGF EPO

Corporeal Soul (魄)	Cysteine	Heart Qi(心气)	Mg
Ideation (意)	Tryptophan	Heart Yin(心阴)	Angiotensin
Will (志)	Arginine	Heart Yang(心阳)	IGF
Thin fluid (津)	Proteins	Spleen (脾气)	Ghrelin
Thick fluid (液)	Lipids	Spleen Yin(脾阴)	Aldosterone Retinoic Acid
Qi (气)	Sodium	Spleen Yang(脾阳)	ANP
Zong Qi (宗气)	Dopamine	Lung Qi (肺气)	HIF
Nutrient Qi (营气)	cAMP	Lung Yin (肺阴)	Ascorbic Acid
Glory Qi (荣气)	ATP	Lung Yang(肺阳)	VEGF FGF7
Defending Qi (卫气)	Chloride	Kidney(肾气)	Nitric Oxide (NO)
Yin Qi	Potassium	Kidney Yin (肾阴)	Wnt
Yang Qi	Calcium	Kidney Yang(肾阳)	Calcitonin PTHrP
Clear Qi (清气)	TLR4	Cold(寒)	IL-1
Turbid Qi (浊气)	Leptin	Damp(湿)	IL-6
Righteous Qi (正气)	Immunoglobulin G (IgG)	Wind (风)	NF-κB
Evil Qi (邪气)	Lipopolysaccharide (LPS)	Heat (热)	TNF-α
Stomach Qi (胃气)	Amylase	Dry(燥)	IL-8
Genuine Qi (真气)	Phosphorus	Summerheat (暑)	COX-2
Blood Qi (血气)	Iron	Consumption(消)	Forkhead Box O1 (FoxO1)
Essence Qi (精气)	Zinc	Central(中)	Aldosterone
Indulged Qi (淫气)	GnRH		
Mind Qi (神气)	Thyroid Hormone (TH)		

**Table 1:** The mapping between TCM and signaling molecules.

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