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Short Communication

Empirical Demonstration of Chee—Canonical Biomarker in Traditional Chinese Medicine—With Fundamental Implications to Biology, Physiology, and Medicine

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Abstract

Since 1990, healthcare systems in advanced nations have been degrading rapidly, with rising costs, rampant chronic diseases, and aging demographics. In response, governments and private sectors have been seeking solutions from untapped fields, such as the 47-century old Traditional Chinese Medicine (TCM). TCM is based on the conceptual theory of qi (or chi) stating that the vitality of human body relies on adequate qi continuously circulating and permeating throughout the entire body. Today, TCM is included in the national health care systems of major countries in East Asia, used by 60-75% of the populations. Elsewhere TCM operations are still in back alleys. TCM's dilemma is rooted in its inability to meet the standards of science and evidence-based modern medicine.

In 2018, this author began to develop the scientific theory of Chee and its field equations based on modern sciences. ("Chee" was coined to differentiate from the commonly used "qi.") TCM procedures were distilled and synthesized, one by one, to metamorphose TCM to Scientific TCM (STCM). Theoretical results were presented in four IEEE international symposiums and published in a medical journal during 2022-2023. Our empirical validation and preliminary characterization of Chee succeeded on November 25, 2024—for the first time—in spite of research efforts worldwide since 1978. Our success mainly stems from the use of spectral technology and modulation technique as Chee is a tiny biomarker emitted by neurons thus at very low frequencies.

Our findings on Scientific TCM and validations on the theory of Chee and Chee as a modulated biomarker are giving rise to new and fundamental visions for biology, physiology, and psychology, which should have broad impacts on diagnosis, treatment, and prevention of diseases, allergies, cancers, among others.

Keywords: Traditional Chinese Medicine, TCM, Biomarker, Chee, Theory of Chee, Tests of Chee, Scientific TCM, Field equations, qi, qi-therapy, qigong, Neuron emission, chi, Physiology, Diagnosis, Medicine, Modulation of biomarker, Spectral technology

Introduction

Since 1990, healthcare systems in advanced nations have been degrading rapidly, with rising costs, rampant chronic diseases, and aging demographics. In response, governments and private sectors have been seeking solutions from untapped fields, such as the 47-century old Traditional Chinese Medicine (TCM). TCM is based on a conceptual theory of qi (or chi) stating that the vitality of human body relies on adequate qi continuously circulating and permeating throughout the entire body. Today, TCM is included in

the national health care systems of major countries in East Asia, used by 60-75% of the populations. Elsewhere, TCM operations are still in back alleys. TCM's dilemma is rooted in its inability to meet the standards of science and evidence-based modern medicine. In 2018 this author began to develop a scientific theory of Chee for TCM based on modern sciences and seven postulates. ("Chee" was coined to differentiate from the commonly used "qi" and "chi.") The theory was formulated by following the pioneering footsteps of Albert Einstein [1] in his creation of the theory of relativity and Julius Stratton [2] in his consummating macroscopic Electromagnetic (EM) theory, as well as by leveraging this author's experience in numerical computations [3] and several relevant EM measurement techniques, e.g. [4]. The first postulate of the theory of Chee is that Chee, as the canonical biomarker of TCM, is a vector power intensity containing four components: Electromagnetic (EM), Mechanic (ME), Thermal (TH), and Biochemical (BC), denoted by χ^{EM}, χ^{ME}, χ^{TH}, and χ^{BC}, respectively. TCM procedures were distilled and synthesized, one by one, to metamorphose TCM to Scientific TCM (STCM).

Theoretical results were presented [5-8] and published [9,10] during 2022-2023. Empirical validation and preliminary characterization of Chee were published recently [11,12]. Tests on the ME and TH components of Chee, χ^{ME} and χ^{TH}, were also conducted; but their data lack the accuracy, richness, and significance of the EM component. The BC component χ^{BC} is highly complex as it is rooted in biochemical processes, too expensive to explore in this project. This paper discusses difficulties in empirical validation and characterization of χ^{EM}, the state of the art, and our method of attack based on spectral technology and biomarker modulation.

Technical Difficulties and our Method of Attack

This author is not aware of any previous empiric data for the EM component of biomarker Chee, χ^{EM}, before his successful tests on November 25, 2024, as indicated earlier [11,12]. The technical difficulties are highly challenging due to the weakness and extremely low frequency of emissions of Chee's source—the neurons. A cursory review on the literature revealed that these difficulties had been recognized in a major research program in which a large number of experts and scholars in China tested qi with an oscilloscope and analysed the data [13]. They had tested 10 qigong masters and practitioners, among others, without success; thus reported the recording as a type of discharged electromagnetic fields with frequencies approximately 0.3-200 MHz, without naming it as qi per se.

Our method of attack began with a close look into the theory of Chee, and concluded that Chee ought to be tiny in intensity and extremely low in frequency since it is an emission from a cluster of neurons, which is within 0.1-200 Hz. This problem is very similar to several previous design projects encountered by this author, and resolved by using spectral technology, which was vividly called out in the preface of a classical book on communications by Blackman and Tukey [14] as follows:

"…a very weak low-frequency peak which would surely have escaped our attention without spectral analysis. This peak, it turns out, is almost certainly due to a swell from the Indian Ocean, 10,000 miles distant. Physical dimensions are: 1mm high, a kilometer long."

Thus, we set up a 1992 oscilloscope to detect the canonical biomarker Chee emitted from humans in 1-200 Hz range. Within several days we captured a robust periodic signal, on 25 November 2024. In the next few weeks, we purchased several modern calibrated oscilloscopes and performed various tests to characterize the biomarker Chee. The data showed that the EM component of Chee, χ^{EM}, is a robust periodic function with a stable frequency of 60 Hz. At any point in time, both amplitude and frequency of χ^{EM} are essentially identical throughout the skin surface. On the other hand, amplitude of χ^{EM} varies from person to person—and within a person—from time to time, driven by his/her mind, emotion, activity, etc. We reason that these findings for the canonical biomarker reflect the outcome of the biological evolution process over many millions of years, which can be logically extended to other vertebrates; this point of view has been confirmed empirically. Preliminary results were published recently [11,12].

Discussion on Modulated Biomarker Chee

Increasingly, we noticed that our test data were consistently at 60Hz and closely associated with the interfering EM fields permeated by the AC power supply at 60Hz in the U.S. When we perform Chee tests in an anechoic chamber that is also fully EM shielded, using a battery-powered oscilloscope and with everything, including humans, inside the chamber kept motionless, the data screen displays a flat straight line with barely discernible occasional flicks. Therefore, we conclude that our measured Chee data are the emissions from neurons of the human under test stimulated by the EM field of the AC power supply permeating quite uniformly in intensity at a very stable frequency of 60Hz. A question of concern was raised in our team: Would our measured Chee data be labelled under the category of "modulated Chee data" for biological systems?

First, it is worth pointing out that modulated biomarkers are very common in biological systems, which are much more complex than nonbiological systems. In fact, most biological processes are regulated dynamically; and the levels of various molecules can fluctuate in response to different stimuli. These fluctuations can serve as biomarkers, indicating normal or abnormal processes. Biomarkers can be influenced by a variety of factors, including environmental exposures, disease states, therapeutic interventions, etc. One of the most notorious modulated biomarkers is Prostate-Specific Antigen (PSA) in urology for detecting prostate cancer.

Therefore, it is important to report that our analysis thus far indicates that our Chee data recorded on oscilloscopes are amplitude modulated, at least for those generated by oscilloscope models of full size. It is noted that Chee data generated by portable models are somewhat degraded; and mini-models do not work at all as their claimed lower bound is 45-Hz, which rejects most of the 60-Hz biomarker Chee.

Concluding Remarks

Our findings on Scientific TCM and validations on the theory of Chee and Chee as a modulated biomarker are giving rise to new and fundamental visions for biology, physiology, and psychology, which should have broad impact on diagnosis, treatment, and prevention of diseases, allergies, cancers, among others. This optimistic outlook is encouraged by the large efforts and significant advances in other TCM research and clinical trials worldwide. Clinical trials conducted in China from 2013 to 2021 totalled 965 items. A TCM clinician/pill-producer in South Korea reported satisfactory treatments on sixteen-thousand patients worldwide with respiratory diseases, including cancer, over the past fifty years.

Conflict of Interest

None.

Acknowledgements

None.

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