Investigating the effect of Taheri Consciousness Field A on the Behavior of Biomimetic Micellar Supramolecular Models

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ABSTRACT

Supramolecular bio-mimicry models are aggregates of chemical components that have the ability to mimic the function of biological molecules. There are many applications for bio-mimicry models in the industry and other research fields. In basic biology, bio-mimicry models can help investigate vital behaviors and life-beginning forms. The effects of Taheri Consciousness Fields (TCFs) on different levels of life in living systems and non-living components such as metal elements have been studied and confirmed prior to this study. In the present research, we investigated the effect of a TCF on biomimetic models, as chemical structures with biologic-like behaviors, with the aim of understanding how vital behaviors are formed from basic chemical components giving rise to life. In this way, the effect of a type of TCF, named TCF (A), on the structure and function of biomimetic micellar supramolecular models mimicking enzyme behaviors was investigated. To mimic the behavior of heme proteins, such as horseradish peroxidase enzyme, this model contained sodium dodecyl sulphate (SDS) micelles body with histidinate hematin in its core. The results showed that TCF (A) does not change the chemical structure of the built-in biomimetic models. However, the predominant population of the sample model was observed to have a smaller particle size, unlike the untreated control. Additionally, the catalytic activity of the biomimetic sample model had an 8% increase in catalytic efficiency, which resembled the performance of the natural enzyme better than the untreated control. Moreover, zeta potential, conductivity, and mobility of the sample model under the influence of TCF (A) were changed by 40%-45% in comparison with the control. In conclusion, according to the results, the TCF (A) treatment made the micellar supramolecular biomimetic model more stable. It more resembles the structure and function of the colloidal solution with the biological molecules of living organisms.

Keywords: biomimetic; supramolecular structure; peroxidase; micelle; Taheri Consciousness Fields

INTRODUCTION

Supramolecular models of bio-mimicry are assemblies of components that have the ability to function similar to biological molecules. Various functions arise from these supramolecular architectures, including micelles for drug delivery, catalysis, molecular recognition, and transport processes (Lehn, 1990; Lorenzo et al., 2000; Kataoka et al., 2012). The assembly of supramolecular structures and their diversity and functionality rely on the set of building blocks and subunits. The attractive and repulsive forces, for instance, hydrogen, ionic, van der Waals, or hydrophobic bonds, within and between these molecules lead to non-covalent bonding (Philp and Stoddart, 1996; Zhang, 2003). Various Surfactant-like oligopeptides have been designed for generating supramolecular structures. These molecules typically have two parts: a hydrophobic tail (composed of hydrophobic amino acids like Gly, Ala, Leu), and a hydrophilic head (composed of hydrophilic amino acids like Arg, Lys, His) (von Maltzahn et al., 2003). Surfactant molecules with dual characteristics have two features, including adsorption at interfaces and self-assembly in bulk solution. Structure-function relationships, as well as solvent properties of these molecules, have been investigated for various surfactant types in various applications (Li, 2017). These studies can provide a model system that mimics the heme environment (Mazumdar et al., 1988; Simplicio et al., 1972). Moosavi-Movahedi et al., (2008) have reported that the micelle cavity of sodium dodecyl sulfate (SDS), protects hematin in the presence of histidine and provides a model system for heme enzymes like HRP. They showed that the triple-components solution of His-hematin-SDS represented a unique absorption band in UV-vis spectra, suggesting the unique structure of the he-moprotein-like biomimetic catalyst.

In the models of the present study, we aim to mimic the behavior of biological enzymes using SDS surfactant, with its dual inherent abilities.

On the one hand, the aqueous medium aids with the formation of spherical micelles similar to the spherical body of enzymes and has two hydrophilic and hydrophobic central surface parts. On the other hand, we design the prosthetic group of hematin in the center of micellar structures along with the coordination of histidine amino acids at the active site of the supramolecular model. This structure most resembles catalases or peroxidases in the laboratory as far as function and structure are concerned.

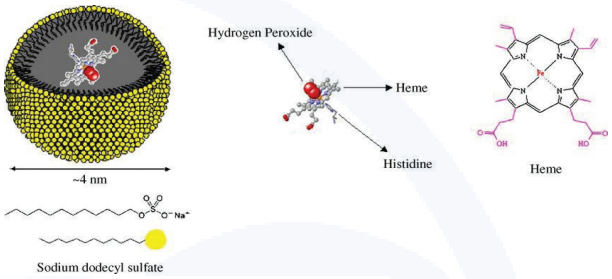

Figure 1. Micellar histidinate hematin as an enzymatic biomimetic system introduced previous-ly (Mousavi et al., 2008). The authors have gained permission to use this figure in the manuscript.

There have been many attempts to explore, discover, and explain diverse physical laws, such as gravi-ty, electromagnetic, or electric fields. The conc ept of fields is used frequently in physical theories. The nature of consciousness and its place in science has received much attention in the current century. Many philosophical and scientific theories have been proposed in this area. In the1980s, Mo-hammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing ele-ments of the universe apart from matter and ener-gy. According to this theory, there are various TCFs with different functions, which are the subcatego-ries of a networked universal internet called the Cosmic Consciousness Network (CCN). The major difference between the theory of TCFs and other theoretical concepts about consciousness is related to the practical application of the TCFs. These

fields can be applied to all living and non-living creatures, including plants, animals, microorganisms, materials, etc.

Mohammad Ali Taheri, the founder of Erfan Keyhani Halqeh, a school of thought, introduced a new science in 2020 as a branch of this school. He coined the term Sciencefact for this new science because it utilizes scientific investigations to prove the existence of T-Consciousness as an irrefutable phenomenon and a fact. Although science focuses solely on the study of matter and energy and Sciencefact, by contrast, explores the effects of the [non-material/non-energetic] TCFs, Sciencefact has provided a common ground between the two by conducting reproducible laboratory experiments in various scientific fields, and it has used the scientific approach in proving TCFs.

The influence of the TCFs begins with the Connection between CCN as the Whole Taheri Consciousness of the universe and the subjects of study as a part. This Connection called "Ettesal" is established by a Faradarmangar's mind (a certified and trained individual who has been entrusted with the TCFs). The human mind has an intermediary role (Announcer) which plays a part by fleeting attention to the subject of study and then the main achievement obtained as a result of the effects of the TCFs. These fields cannot be directly measured by science, but it is possible to investigate their effects on various subjects through reproducible laboratory experiments (Taheri, 2013).

The research methodology in the study of T-Consciousness has been founded on the process of Assumption, Argument, and Proof, in which the basic Assumption is: The Cosmos was formed by a third element called T-Consciousness that is different from matter and energy.

The Argument: The existence of TCFs can be demonstrated by their effects on matter and energy (e.g., humans, animals, plants, microorganisms, cells, materials, etc.)

The Proof is the scientific verification of the effects of TCFs on matter and energy (according to the Argument) through various reproducible scientific experiments.

Accordingly, to investigate and verify the existence, effects, and mechanisms of TCFs, the following five research phases (Phases 0 through 4), and the aims of each phase are outlined below. Phase-0 studies aim to prove the existence of TCFs by observing their effects. The nature of T-Consciousness and what it is will not be addressed in this phase. Phase-1 explores the varied effects of different TCFs. Phase-2 examines the reason behind the varied effects of these fields. Phase-3 investigates the mechanism of TCFs effects on matter and ener-gy. Finally, Phase-4 draws significant conclusions, particularly with regard to the mind and memory of matter and their relation to the T-Consciousness, etc. The effects of TCFs have been investigated in different areas including the brain during connection to the CCN (Taheri et al., 2020b, Taheri et al., 2021e, Taheri et al., 2021g), magnetic properties of materi-als (Taheri et al., 2021h), technetium 99 (Taheri et al., 2021i), wheat plant under salinity stress(Torabi et al., 2020), MCF7 cancer cell line (Taheri et al., 2020a), Alzheimer disease (Taheri et al., 2021b, Taheri et al., 2021c), as well as bacterial (Taheri et al., 2021d) and viral growth (Taheri et al., 2021a). Another study focused on investigation of the structure and function of horseradish peroxidase (HRP) under the influence of TCF1 and it was found that the Km and Vmax of this enzyme changed when exposed to this novel field (Taheri et al., 2021j).

A model system that mimics the function of biological molecules under laboratory and non-cellular conditions can be helpful to investigate the effect of TCFs on the formation of biological behaviors. The effect of the TCF (A) on the behavior of the gold nanozyme biomimetic models has already been reported (Taheri et al., 2021k).

The aim of this study is to investigate the effect of TCF (A) on the behavior of biomimetic micellar supramolecular models.

MATERIALS AND METHODS

Porcine hematin, sodium dodecyl sulfate, and histidine were obtained from Sigma Ltd., UK. Other analytical grade chemicals from Merck Ltd, India, were used without further purifications. Doubly distilled water was used as the solvent for all experiments. Hematin solutions were prepared daily, and guaiacol solutions were refreshed after 2 h. All solutions were stored in an ice bath during the experiments.

T-Consciousness Fields application:
TCFs were applied to the samples according to the protocols regulated by the COSMOintel research center (www.COSMOintel.com). A request for Connection to the CCN to utilize TCFs can be placed through the COSMOintel website in the "Assign Announcement" section. This access is available for everyone at no cost. In order to study and experience this Connection, the researchers can register on the website at any time and in order to report the experiment to the COSMOintel research center. Certain details of the experiment must be provided to the center; for example, the characteristics or number and name of samples and controls must be specified. This entire experiment was carried out as a double-blind method where lab technicians were completely unaware of TCFs theory, and the Faradarmangar at the COSMOintel research center who established the Connection was unaware of the details of the study. Double-blind is a gold standard that is common in science experiments in the field of medicine and psychology, involving theoretical and practical testing.

Structural analysis: Absorption spectra were collect-ed with a Model Varian Cary Bio 100 spectropho-tometer using 1-cm path-length cells. Additionally, the particles were characterized by dynamic light scattering (DLS) using 90 Plus Pals (Brookhaven In-struments Corp., USA, and PALS zeta-particle sizing potential analyzer software.

Kinetic assay: Steady-state kinetics of guaiacol oxidation by hydrogen peroxide, which was catalyzed by model catalysts, were obtained at 470 nm (colored product of the reaction) (Beck et al., 1992) in 50 mM phosphate buffer solution, pH 7.4 (PBS).

Progress curves of reactions were measured at various guaiacol concentrations (0.1–2 mM), and the initial rates were used to draw the Michaelis–Menten graphs. The concentration of H_2O_2 was kept constant at 1.2 mM to ensure pseudo-first-order kinetics. In a period of 120 seconds during which the progress curves were recorded, guaiacol (0.2–10 mM), and hydrogen peroxide (0.25 mM), were added to the reaction vessel. The initial rate of reaction was calculated from the 45th second when the curve was still linear. In order to reach the steady-state condition, a lag time of 7 seconds was used. H_2O_2 stock solutions were prepared by appropriate dilutions of 30% (v/v) H_2O_2 in deionized water. The concentrations of hydrogen peroxide were measured by taking its absorbance at 240 nm using ε240 as 43.6 cm−1 M−1 (George, 1953). All the diluted solutions were freshly prepared.
Preparation of biomimetic supramolecular models: The Critical Micelle Concentration (CMC) was reached by using SDS surfactant at a concentration of 8.5 mM in 50 mM phosphate buffer (Moosavi et al., 2008). In order to maintain the maximum and the stable number of SDS micelles, we used a concentration of 90 mM (in 50 mM phosphate buffer, pH: 7.4). This concentration is 10 times higher than mentioned CMC of SDS micelles.

Micellar Hematin Model (MH model) refers to hema- tin when it is in the core of spherical SDS micelle. MH model was obtained at a concentration higher than CMC (90 mM), with the hematin titer. Micellar histidine hematin model (MHH model) re-fers to hematin when it binds to histidine amino acid in the center of the SDS micelles. This model was ob-tained with histidine titration of the MH model.

RESULTS

Structural analysis of synthesized model: In the diagrams of Figure 1, we provide spectrophotometric graphs that are characteristics of the colloidal solution of synthesized supramolecular models. As can be seen in Figure 1-a, a λmax at 220 nm characterized the formation of SDS micelles. The concentration of 10 mM of hematin was optimal to produce the MH model in 90 mM SDS solution (Figure 1-b). Moreover, at an 80mM concentration of histidine solution (in 50 mM phosphate buffer, pH: 7.4), MHH models were formed (Figure 1-c).

The MHH supramolecular model has distinct peaks at 430 and 535 nm (Figure 1-c). The soret band of the previous MH model, with the introduction of histidine into the solution and the involvement of hematin in the center of the SDS micelles, assuredly created a more hydrophobic environment and separated the interconnected hematins enveloped by micelles. This made a notable blueshift (from 400 to 430 nm) at the peak of histidine-containing hematin. Additionally, the 530 nm band, as observed in both models, was very similar to the nearby band in hemoglobin, verifying that the MHH model is similar to the eukaryotic heme-proteins.

The construction steps of MH and MHH models (a to c shown in Figure 1) were performed in two different experimental setups: (1) without TCF (A) treatment (control) and (2) under the influence of TCF (A) on the solution of reactant. The λmax and intensity of spectrophotometry plot of both MH and MHH models (Figure 1) did not show any difference between the TCFA treated sample and the untreated control. In other words, as a result of applying the TCF (A), no change occurs in the basic structure of the constructed MH and MHH models.

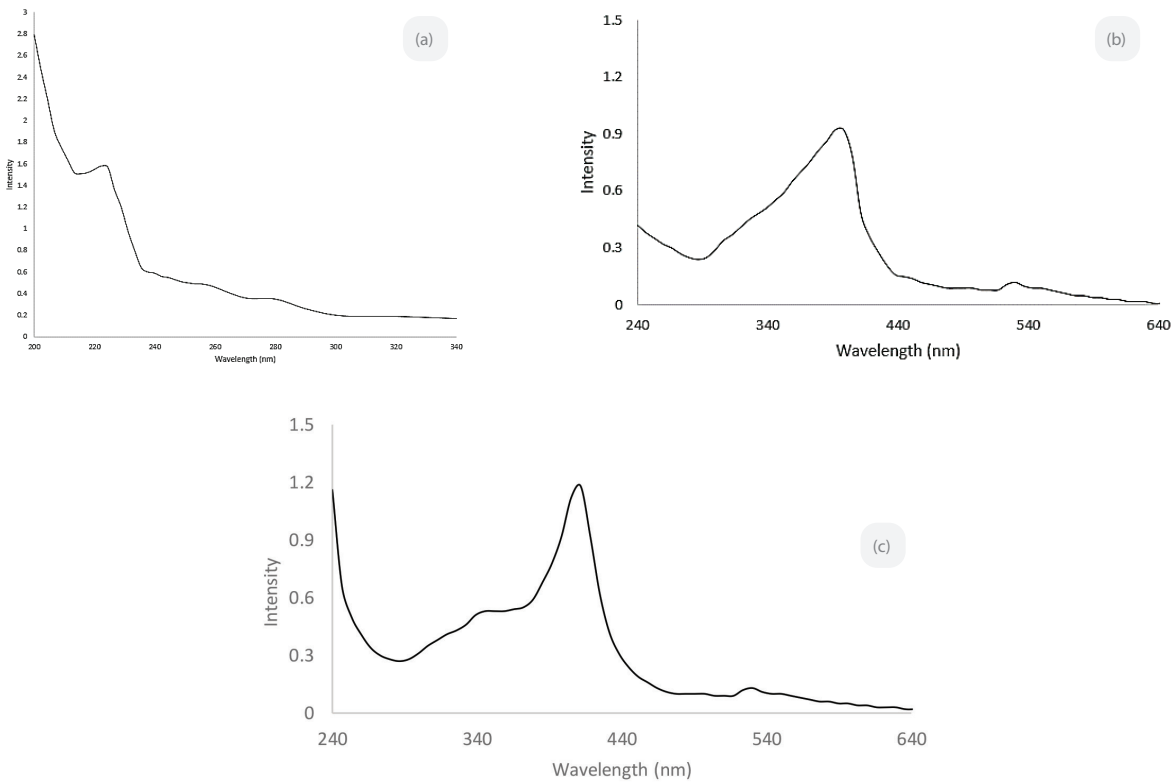

Figure 1. Spectrophotometry of the supramolecular models synthesized in the present study; (a) formation of spherical SDS micelles, (b) Micellar Hematin Model (MH) model, and (c) Micellar Histidine Hematin model (MHH) Model.

However, measuring several colloidal parameters of the MHH model (final model in the present study) solutions using DLS show a difference between the untreated control and TCF(A) treated samples (Table 1).

The zeta potential, mobility, and electrical conductivity of the MHH model treated with TCF (A) have an increase of 41-45% in comparison with untreated controls.

Table 1 . Comparison of structural parameters of MHH (Micellar Histidine Hematin) model of the supramolecular control and sample under treatment of Taheri Consciousness Field (TCF A) obtained by DLS technique (zeta execution time: 30 seconds)

Parameter	Control	Sample	Diff. relation to control (%)
Zeta Potential	10.8 mv	15.2 mv	+40.7
Polarity	Negative	Negative	-
Mobility at 25°C	0.84u/s/V/cm	1.19u/s/V/cm	+41.6
Conductivity	721 uS/cm	1048 uS/cm	+45.3
Field Strength (Req/Act)	10 / 9.5 kV/m	10 / 9.3 kV/m	-2.1

Figure 2 indicates a plot of the size distribution of the synthesized MHH model in the sample and control. Moreover, the data in Fig. 2 was compared in both TCF (A)-treated sample and the untreated control and presented in Table 2. Approximately 86% of the MHH population in the control samples (PDI=0.1751) are spherical particles with a diameter of 2.34 µm. A smaller percentage (about 15%) is related to the spherical particles with a diameter of 0.291 µm. On the other hand, the MHH model (PDI=0.6231) under the TCF (A) treatment resulted in the formation of 66% of small particles of 0.874 µm diameter, and 34% of particles with a diameter of 4.560 µm. The dominant population in the untreated control MHH model was 3 times smaller than the dominant population in the control MHH model. On the other hand, the smaller population in the TCF (A) treated MHH model was 16 times larger than the same population in the control MHH model.

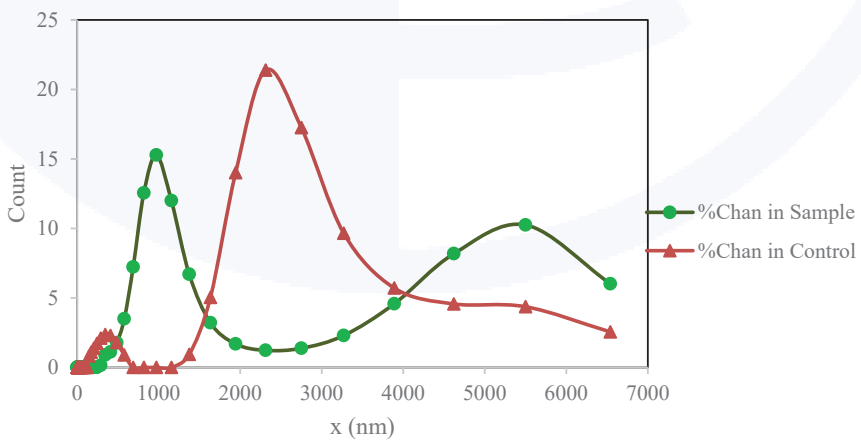

Figure 2. The size distribution of the untreated control compared to the Taheri Consciousness Field A treat-ed biomimetic model of the Micellar Histidine Hematin (MHH) as the sample.

Table 2 . The size distribution of the final supramolecular model made in the controlled and treated by the Taheri Consciousness Field A

	Diameter (nm)	Vol%	Width
Control	2340	85.5	1792
	291.4	14.5	240.6
Sample	4560	33.9	2215
	874	66.1	548

Performance of supramolecular model:

Under the treatment of TCFA, the MHH model shows a slight but noticeable increase of 7%-8% in maximum velocity and catalytic efficiency (Table 3).

Table 3 . Kinetic constants of the Micellar Histidine Hematin (MHH) model

	Km (μM)	STD	Vmax (μMs-1)	STD	kcat (s^{-1})	Catalytic efficiency ($\mu M^{-1}s^{-1})\times10^{-3}$
Control	3.42	0.03	1.153	0.04	0.0230	6.72
Sample	3.40	0.02	1.23	0.02	0.0246	7.23

DISCUSSION

One feature that enables living cells and systems to reproduce early in life is hierarchical self-organization. Many molecules in chemistry and biology are known for this ability (Halley and Winkler 2006). Self-organization is the process by which compo-nents of collective behavior organize themselves to create global order through interactions between themselves (Kumar, 2006). Micelles are selforganized aggregates of amphiphiles characterized by both apolar hydrophobic (lipophilic) and polar (hydrophilic) groups. The interaction between micelles and other components of hydrophobic and hydrophilicis used to form supramolecular structures capable of performing biologic-like behaviors inbioinorganic chemistry (Owen and Butler, 2011). Inthe present study, SDS surfactant was used because of its ability to form spherical micelles similar to spherical enzymes and proteins. Moreover, placing hematin as a prostatic group in coordination with histidine at the center of micellar structures provides a state that most resembles natural enzymes and proteins, such as catalase, per-oxidase, and hemoglobin in the laboratory. These models were constructed in two modes under the treatment of TCF (A) and without it. We then investigated the structural and functional properties of the constructed models in colloidal solutions during the catalysis of substrates.

The TCFs founded and introduced by Mohammad Ali Taheri are the fields that can influence living organisms, and non-living matter at various levels.This effect is theoretically due to the transfer of data and information from the Whole Consciousness to the components of the system. This connection acts to repair and reconstruct components of the systems and optimizes their behavior. The effect of the TCF (A) on the behavior of gold nanozymes biomimetic molecules has been investigated in a previous study. It was found that the TCF 1 treatment led to the ho-mogeneity of the particle size and enhanced the en-zymatic catalysis performance in vitro (Taheri et al., 2021k).

In the current experiment, we investigated TCF (A) effect on micellar supramolecular structures and reported a lack of change in the chemical structure of synthesized models.

In contrast, the association between changes in particle size distribution and general catalytic power can be seen in the sample of the present study. Previously, the behavior of

gold Nano-chemical samples under the influence of TCF A was investigated. The results demonstrated a decrease in the size and an increase in the catalytic performance in comparison with the untreated control samples (Taheri et al., 2021k). Additionally, TCF (A) treatment resulted in a significant decrease in zeta potential (41%), increase in conductivity (45%), and mobility (42%) of the sample molecules compared to the untreated controls. This indicates higher stability of the sample, increased charged particles at the surface of biomimetic structures, and, consequently, increased mobility in the colloidal environment, respectively.

The factors of increasing the mobility and stability of biological structures, such as proteins and ribonucleic acids play crucial roles in the constitution of biological systems (Tabaka et al., 2014; Ball, 2017). In conclusion, TCF (A) contributes to guiding the behavior of the biomimetic models closer to the behavior of biological molecules. This suggests the application and effectiveness of these fields in the formation of life and may aid the existing theories for the beginning of life events. Further studies using experimental simulations and other design models are required to elucidate the influence of TCFs on early life events.

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