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Influence of Faradarmani Consciousness Field on Bacterial Population Growth

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Abstract

The treatment of bacterial infections, along with the rising threat of antibiotic resistance, represents a major global concern and a fundamental challenge in both basic and clinical microbiology. In the present study, we examined the effect of the Faradarmani Consciousness Field—described as having a non-material and non-energy nature—on bacterial populations. Bacterial growth in control and Faradarmani-exposed groups was assessed using turbidity measurements, colony counts, and tetrazolium chloride reduction. The results showed that the Faradarmani Consciousness Field reduced the growth of several bacterial strains (by up to 46%). Additionally, along with reduced bacterial populations, evidence of increased viability (up to 60%) was observed when the cultures were maintained under test-tube conditions. This observation suggests that the effect of the Consciousness Field may vary depending on environmental conditions. Overall, this experiment demonstrated that bacterial behavior changed under the influence of the Faradarmani Consciousness Field compared with the control. Further studies are needed to investigate the mechanism underlying these effects.

Keywords: Faradarmani, T-Consciousness Fields, laboratory bacteria, clinical bacteria, viability assay

Introduction

Bacteria existed long before humans as the first forms of life on Earth, with the need to adapt to environmental conditions and changes over time. Many bacteria use quorum sensing (QS) to control their gene expression in response to population density. During specific stages of growth, or in response to environmental stresses, bacteria produce signaling molecules that reach a threshold concentration and activate regulators that can induce or repress target genes (Frederix et al., 2011). Bacteria, through the development of communication capabilities (e.g., quorum sensing, chemotactic signaling, and plasmid exchange), achieve better adaptability to growth conditions (Ben-Jacob, 2003). Additionally, bacteria can form structured colonies to increase their benefit from accessing resources—an advantage that individual bacterial cells cannot effectively utilize (Shapiro, 1998).

Much research has been conducted to study bacterial growth properties and characteristics (Schaechter, 2015). It has been demonstrated that bacteria grow in a predictable pattern with four distinct phases when placed in a suitable medium. Initially, bacteria grow relatively slowly (lag phase), before reaching a maximum growth rate more rapidly (log phase). Following that, they enter a plateau phase in which the rates of growth and death become equal (stationary phase). In the final decline phase, the rate of cell death exceeds the rate of growth. The growth curve of a bacterial population is similar to that of other living populations in a restricted environment (Henrici, 1928). By observing the intelligent behavior of bacteria, it has been suggested that they possess the ability for 'linguistic' communication and social intelligence (Jacob et al., 2004).

Antibiotics have been developed to combat disease-causing bacteria, such as those responsible for infections, tuberculosis, gonorrhea, plague, or anthrax, among others. However, bacteria have the ability to become resistant to antibiotics under prolonged selection pressures. According to the Centers for Disease Control and Prevention (CDC) (2014), antibiotic resistance is one of the most serious health threats. Each year in the U.S., at least 2.8 million people get an antibiotic-resistant infection, and over 35,000 people die. Due to the increase in resistance rates to conventional antibiotics, alternative methods such as bacteriophage therapy (Golkar et al., 2014), predatory bacteria (Kadouri et al., 2013), or bacteriocins (Cotter et al., 2013) are being investigated. Additionally, many varieties of compounds produced by plants have proven to have therapeutic potential and antimicrobial effects or to elicit modifications to antibiotic resistance (Sibanda et al., 2007). Another alternative for growth inhibition of resistant bacteria is attenuation of bacterial virulence by inactivating the QS system of a pathogen (Hentzer et al., 2003).

There is limited information available regarding the effects of complementary medicine methods on the growth of bacteria in culture media. This study investigates the influence of the Faradarmani Consciousness Field, which has a non-frequency nature. Mohammad Ali Taheri has introduced this field as a complementary medicine modality, whose effectiveness begins through the mind of the announcer (Taheri et al., 2013).

In previous studies, the effects of Faradarmani CF were investigated on changes in cancer cell growth (Taheri et al., 2020a), electrical activity in the brains of Faradarmangars (Taheri et al., 2020b), and wheat plants under salinity stress (Torabi et al., 2020). In this study, the influence of the Faradarmani Consciousness Field on the growth behavior of different populations of laboratory and nosocomial bacterial strains is investigated.

Material and Methods

Application of Faradarmani Consciousness Field

The use of the Faradarmani Consciousness Field (CF) was carried out according to the protocol established at the CosmoIntel Research Center1[1]. Further details are provided in the Considerations section of this issue.

1. www.cosmointel.com

Turbidimetry of the primary selected bacterial strains at 24 hours

Bacterial growth under the influence of Faradarmani CF was measured by turbidimetry at OD600 nm in tube cultures. For this purpose, 36 test tubes containing 10 ml of Müller-Hinton Broth medium were prepared and autoclaved. Two sets of culture tubes were inoculated with 10^2 and 10^5 CFU/ml of the test microorganisms. Control and treatment samples were placed in separate holders in an incubator at different levels. Sampling of the cultures was performed 24 hours after the start of incubation, with a volume of 1.5 ml taken from each tube.

Bacterial growth analysis at different time intervals

To better interpret the growth behavior of bacteria under the influence of the Faradarmani Consciousness Field, growth changes were measured using three methods: 1) Turbidimetry at OD600 nm, 2) Colony counting, and 3) Measurement of bacterial capacity to reduce tetrazolium chloride. To assess the effect of the Faradarmani Consciousness Field at different time intervals, sampling was performed three times in two separate stages: in the first stage at 6, 16, and 24 hours, and in the second stage at 1, 3, and 6 hours.

In this part of the experiment, and as the first step, eight test tubes containing 10 ml of Müller–Hinton Broth and eight Erlenmeyer flasks containing 20 ml of Müller–Hinton Broth were prepared and autoclaved. In the first stage, microorganisms were cultured in both tubes and flasks under treatment (Faradarmani CF) and control conditions. In the second stage, only growth in Erlenmeyer flasks was considered.

One milliliter of bacteria at 10^5 cfu/ml was added to each tube and flask. Control and treatment samples were placed in separate holders inside an incubator at different levels. The Erlenmeyer flasks were placed on an incubator shaker in separate rows, with the greatest possible distance between treatment and control samples. Sampling from the culture media was performed at 6, 16, and 24 hours (first stage) and at 1, 3, and 6 hours (second stage) after the start of incubation, using a volume of 1.5 ml. At each time point, bacterial growth was evaluated using the methods mentioned above.

For assessing cell viability using tetrazolium chloride in the first stage, 10 µl of a 1 mg/ml aqueous solution was added to 1 ml of the microbial sample, and after one hour of incubation at 35°C, the absorbance of the samples was read at 495 nm. In the second stage, all procedures were the same as in stage 1, except that the concentration of tetrazolium chloride was 100 times higher.

Statistical analysis

In this study, each sample was tested in triplicate, and no samples were excluded. Analyses were performed using SPSS (version 27) and the statistical t-test, with a p-value < 0.05 considered the threshold for significance.

Results

Faradarmani CF Effect on the Primarily Selected Bacterial Strains at 24 Hours

To examine the effect of the Faradarmani Consciousness Field on bacteria, four laboratory strains and five clinical (hospital-acquired) strains were used. The effectiveness, based on the percentage of reduction in microbial populations, is reported in Table 1.

Table 1. Change in absorbance at 600 nm for tube culture at 24 hours, comparing the sample under the influence of the Consciousness Field and the control.

Type of strain	Strain*	Characteristics	%Reduction (Early population: 10^2)	%Reduction (Early population: 10^5)
Laboratory	*E. coli*	Symbiotic (G-)	18.38	8.7
	K. pneumoniae (1)	Symbiotic (G+)	33.78	17.32
	S. aureus (1)	Symbiotic (G+)	24.17	45.04
	B. subtilis	Environmental (G+)	24.4	26.98
Nosocomial	*P. aeruginosa (1)*	Pathogenic (G-)	4.2	6.2
	P. aeruginosa (2)	Pathogenic (G-)	1.7	12.7
	K. pneumoniae (2)	Pathogenic (G+)	5.6	0.7
	S. aureus (2)	Pathogenic (G+)	5.4	0.6
	S. aureus (3)	Pathogenic (G+)	7.6	1

* The numbers in parentheses refer to different strains of a bacterial species.

Based on the results presented in Table 1, among the laboratory bacterial strains at a concentration of 10^5 cfu/ml, the greatest reduction was observed in *S. aureus*, while the smallest reduction at the same concentration occurred in *E. coli*. The changes observed in Gram-positive and Gram-negative bacteria under the influence of the Faradarmani Consciousness Field did not differ considerably. Furthermore, among the clinical (nosocomial) bacterial strains, the greatest reduction in microbial population at a concentration of 10^5 cfu/ml was seen in *P. aeruginosa* (2), and the smallest reduction at the same concentration occurred in *S. aureus* (2). According to the obtained results, the effect of the Faradarmani Consciousness Field on clinical strains was lower than on laboratory strains.

Faradarmani CF Influence on Bacterial Growth at Different Time Intervals

Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, and Bacillus subtilis were used to study the effect of Faradarmani CF treatment on the growth behavior of bacteria. In the first step, the growth of the selected strains was examined at 6, 16, and 24 hours in both tube and Erlenmeyer flask cultures through turbidity measurements, colony counting, and tetrazolium chloride reduction methods. After considering the results of the first step, in the second step, similar studies were conducted at 1, 3, and 6 hours in Erlenmeyer flask conditions through colony counting and the tetrazolium chloride method, as discussed below.

Turbidity measurements

Changes in bacterial populations at different time points were measured by turbidimetry at 6, 16, and 24 hours. The test-tube method is a common approach for studying the antimicrobial effects of antibiotics, whereas the Erlenmeyer flask provides a more suitable growth environment for bacteria due to better aeration and greater uniformity of the culture medium. In this study, both tube and Erlenmeyer flask methods were used to determine the effect of the treatment, and the results are presented in Tables 2 and 3.

Table 2. Changes in absorbance at 600 nm for bacterial tube cultures at 6, 16, and 24 hours.

Type of strain	Strain	OD_{600nm}						Efficacy of treatment (%) (-): Decrease in population (+): Increase in population		
		6 hours		16 hours		24 hours				
		Control	Treatment	Control	Treatment	Control	Treatment	6h	16h	24h
Laboratory	*E. coli*	0.168	0.121	0.436	0.409	0.878	0.950	-27	-6	+8
	B. subtilis	0.023	0.021	0.161	0.148	0.333	0.282	-8	-8	-15
Nosocomial	*P. aeruginosa*	0.121	0.113	0.379	0.125	0.985	0.853	-7	-67	-13
	S. aureus	0.152	0.132	0.157	0.135	0.195	0.192	-13	-14	-1.5

Table 3. Changes in absorbance at 600 nm for bacterial cultures in Erlenmeyer flasks at 6, 16, and 24 hours

Type of strain	*Strain*	OD_{600nm}						Efficacy of treatment (%) (-): Decrease in population (+): Increase in population		
		6 hours		16 hours		24 hours				
		Control	Treatment	Control	Treatment	Control	Treatment	6h	16h	24h
Laboratory	*E. coli*	0.157	0.125	1.635	1.428	2.403	2.295	-20	-12	-4
	B. subtilis	0.025	0.015	0.936	0.841	2.380	2.440	-40	-10	+2
Nosocomial	*P. aeruginosa*	0.380	0.301	0.606	0.532	1.816	1.680	-20	-12	-7
	S. aureus	0.150	0.126	0.204	0.222	2.208	1.981	-16	+8	-10

The results of tube and Erlenmeyer flask cultures, measured through turbidity assessment, showed that there were differences in absorbance between the treatment and control samples. In the Erlenmeyer flask environment, the absorbance differences at 6 hours were greater than those observed at 16 and 24 hours. Although a reduction in the population of all bacteria was observed during the early hours of exposure to the Consciousness Field, slight increases were detected at 16 and 24 hours, which may indicate the dynamic nature of the field's effect over time. For example, an 8% increase was observed in *S. aureus* and *E. coli*.

Colony count measurements

Since living and dead bacteria cannot be distinguished using the turbidity method, the colony-counting method was used to measure changes in bacterial populations in the culture medium. For this purpose, in the first phase, the tube and Erlenmeyer flask cultures were plated at 6, 16, and 24 hours in Müller-Hinton medium with two replicates, and colonies were then counted. The results of the colony counts are presented in Tables 4 and 5.

Table 4. Colony count results of treatment and control samples in the tube culture method at 6, 16, and 24 hours.

Type of strain	Strain	Colony Count						Efficacy of treatment (%) (-): Decrease in population (+): Increase in population		
		6 hours/10^4		16 hours/ 10^6		24 hours				
		Control	Treatment	Control	Treatment	Control	Treatment	6h	16h	24h
Laboratory	*E. coli*	NC	NC	357	285	NC	NC	ND	-20	ND
	B. subtilis	55	40	20	16	NC	NC	-27	-20	ND
Nosocomial	*P. aeruginosa*	398	NC	49	41	NC	NC	ND	-16	ND
	S. aureus	310	184	37	29	NC	NC	-39	-25	ND

NC: Uncountable; ND: Not determined

Table 5. Colony count results for treatment and control samples in Erlenmeyer flask culture at 6, 16, and 24 hours.

Type of strain	Strain	Colony Count						Efficacy of treatment (%) (-): Decrease in population (+): Increase in population		
		6 hours/10^4		16 hours/10^6		24 hours/10^8				
		Control	Treatment	Control	Treatment	Control	Treatment	6h	16h	24h
Laboratory	*E. coli*	NC	1328	433	320	NC	NC	ND	-26	ND
	B. subtilis	190	124	51	45	NC	NC	-34	-11	ND
Nosocomial	*P. aeruginosa*	169	179	487	352	NC	NC	+6	-27	ND
	S. aureus	NC	100	64	53	NC	NC	ND	-16	ND

NC: Uncountable; ND: Not determined

The colony count results for the 24-hour samples were not obtainable due to excessive bacterial growth (NC), and in cases where the colony count for either the control or treatment sample was not available, calculating the percentage of treatment effectiveness was not possible. In other cases, the colony count results showed that the Faradarmani Consciousness Field treatment reduced the bacterial population, although for P. *aeruginosa* at 6 hours, the opposite result (an increase in population) was observed.

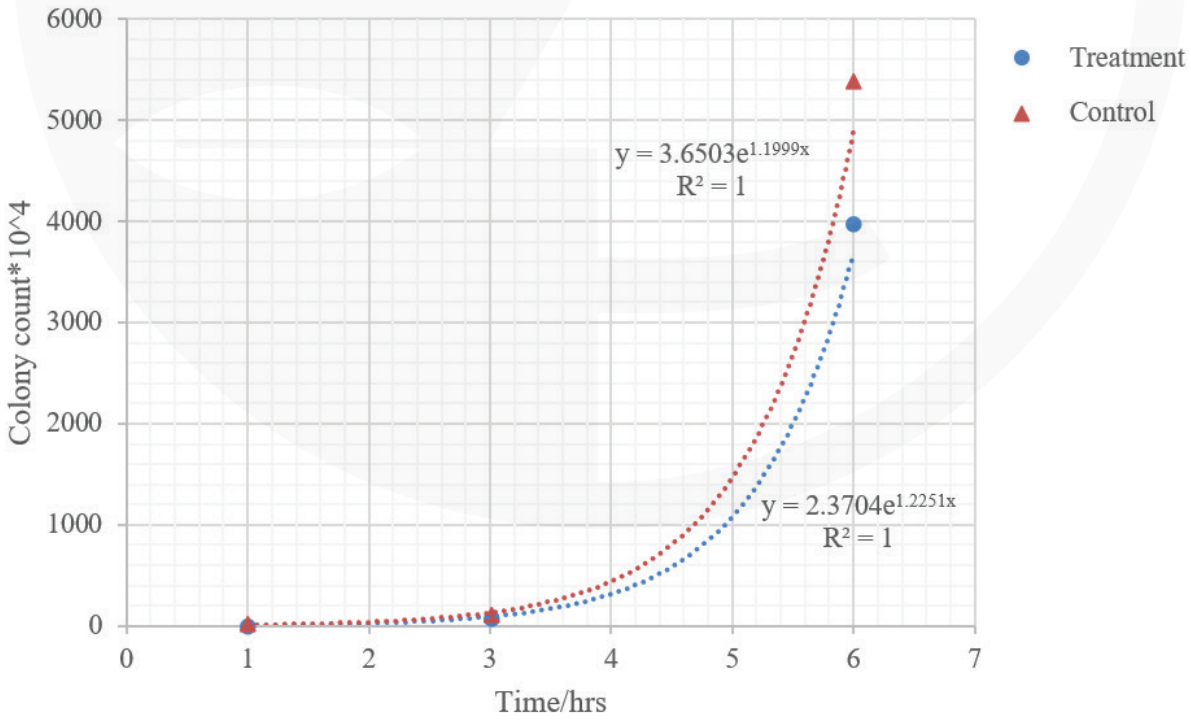
In the second step, after observing the effect of the Faradarmani Consciousness Field in the first stage through turbidity measurements and colony counts, the colony count of the Erlenmeyer flask samples was repeated, and sampling was performed at 1, 3, and 6 hours. The results of this stage are presented in Table 6.

Table 6. Colony counts of Faradarmani Consciousness Field–treated samples and control samples in Erlenmeyer flasks at 1, 3, and 6 hours.

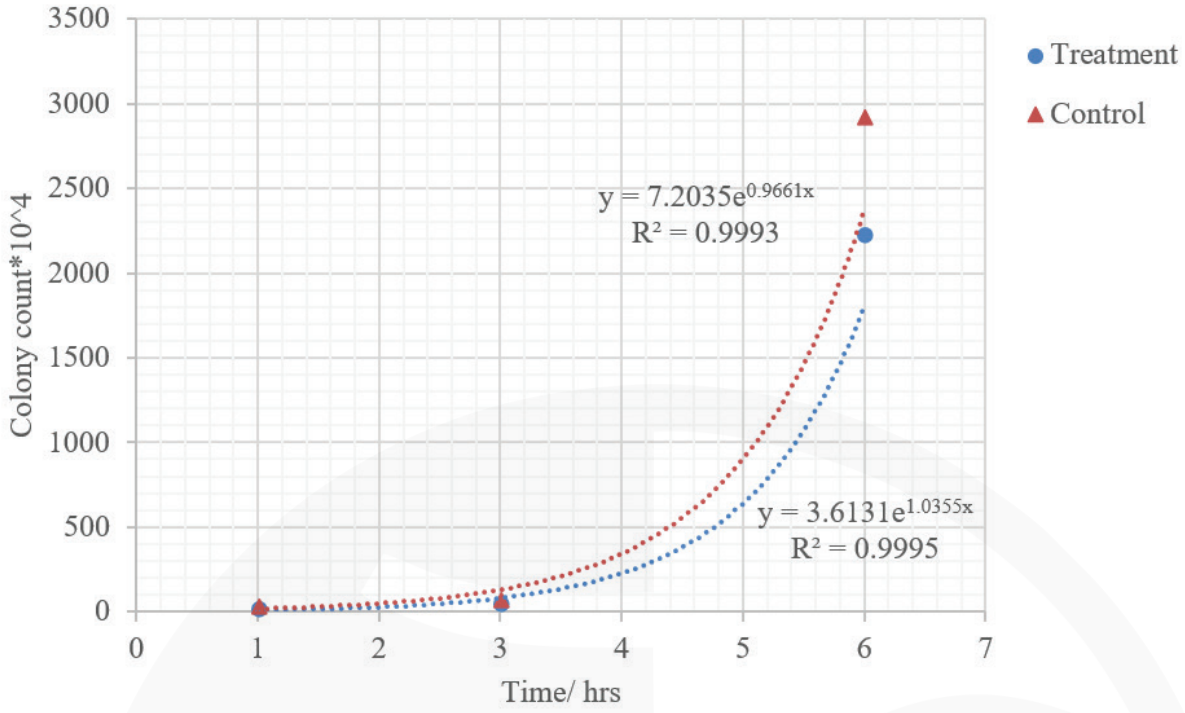
Type of strain	Strain	Colony Count						Efficacy of treatment (%) (-): Decrease in population (+): Increase in population		
		1 hours/10^4		3 hours/10^4		6 hours/10^5				
		Control	Treatment	Control	Treatment	Control	Treatment	1h	3h	6h
Laboratory	*E. coli*	14	9	105	78	538	397	-35	-23	-26
	B. subtilis	3.4	2.2	6.2	4.3	9.6	7.5	-34	-30	-22
Nosocomial	*P. aeruginosa*	26	13.9	77	48	293	222	-46	-37	-24
	S. aureus	11.9	9.1	35	24	88	73	-23	-31	-17

As shown in Table 6, the effect of the Faradarmani Consciousness Field treatment is notable in the first hour of observation for both laboratory and clinical strains. The greatest change was observed in *P. aeruginosa* during the first three hours of the study. These results are consistent with the findings from the previous replication (Table 2), which also showed a reduction in bacterial populations even at the early time points of treatment.

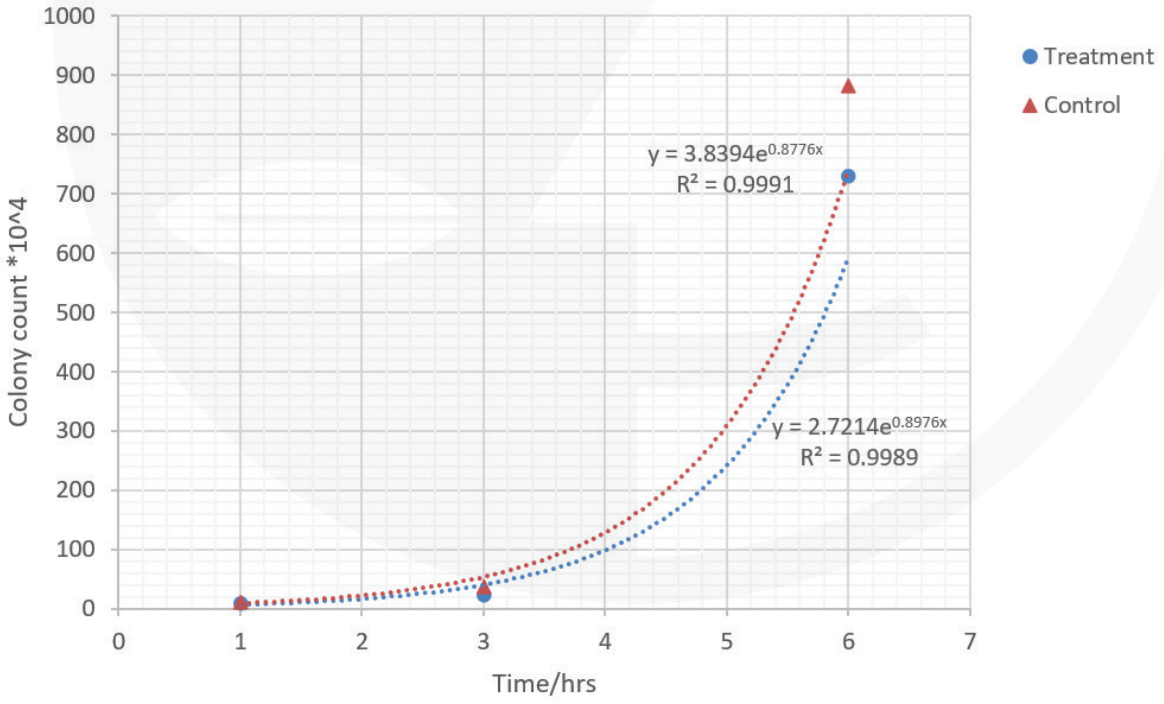
A



B


Colony count*10^4
3500
3000
2500
2000
1500
1000
500
0
0
1
2
3
4
5
6
7
Time/ hrs
y = 7.2035e^0.9661x
R² = 0.9993
y = 3.6131e^1.0355x
R² = 0.9995
Treatment
Control

C


Colony count *10^4
1000
900
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
Time/hrs
y = 3.8394e^0.8776x
R² = 0.9991
y = 2.7214e^0.8976x
R² = 0.9989
Treatment
Control

D

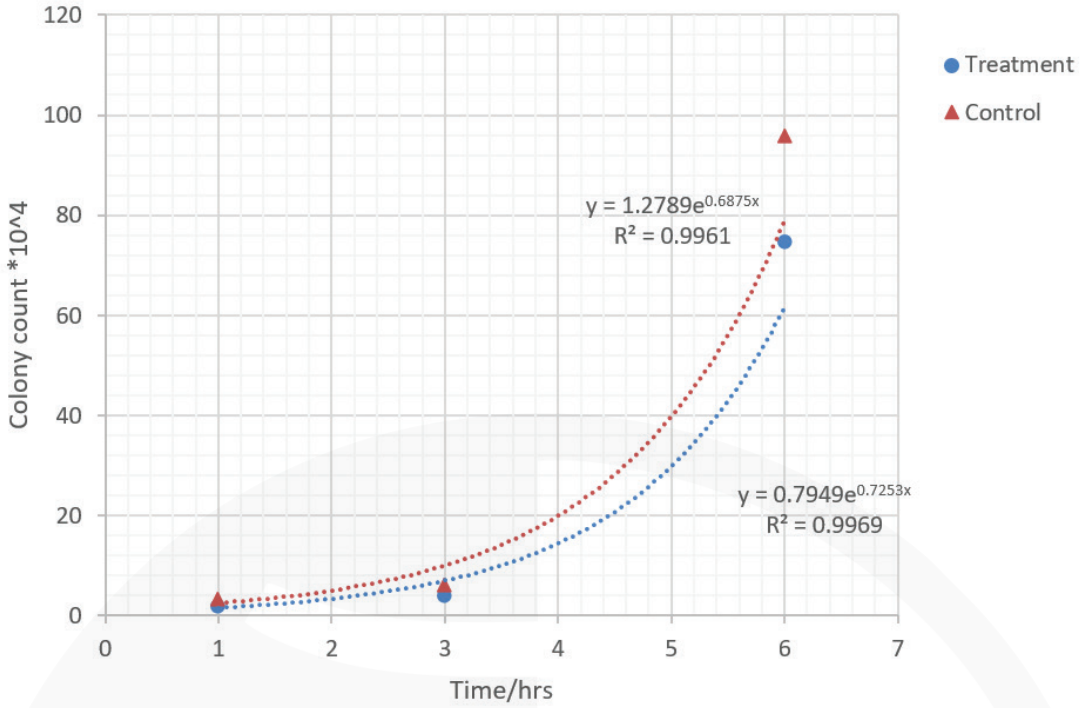


Figure 1. Exponential growth plot during the first six hours of the bacterial life cycle for samples treated with the Faradarmani Consciousness Field compared with control samples. A: *E. coli.* B: *B. subtilis.* C: *P. aeruginosa.* D: *S. aureus.*

As shown in Figure 1, the exponential growth curve of the Faradarmani Consciousness Field–treated samples compared with the control samples demonstrates a clear and significant effect of this field on the different bacterial populations, particularly within the first 1 to 3 hours of bacterial growth.

Results of tetrazolium chloride reduction

This assay was used to evaluate the metabolic status of the bacteria and any potential changes in their bacterial regeneration capacity, which indicates cell viability. The reduction of tetrazolium chloride by dehydrogenase enzymes in healthy bacterial cells produces a red color that can be measured by light absorbance at 495 nm. In the first stage of the tetrazolium chloride assay, measurements at 6 and 16 hours were not recorded due to low bacterial concentration and faint coloration. The earliest possible measurement time was at 24 hours, which is shown in Table 7.

Table 7. Tetrazolium chloride assay in Erlenmeyer flask and tube bacterial cultures measured by optical absorbance at 495 nm at 24 hours.

Type of strain	Strain	Tube culture			Erlenmeyer flask culture		
		A_{495nm}		Efficacy of treatment (%)	A_{495nm}		Efficacy of treatment (%)
		Control	Treatment		Control	Treatment	
Laboratory	*E. coli*	1.7519	1.1173	-36	1.1426	1.0929	-4
	B. subtilis	0.4960	0.7915	+59	0.3839	0. 2790	-27
Nosocomial	*P. aeruginosa*	0.6679	0.7043	+5	2.4616	2.0637	-16
	S. aureus	0.6063	0.7886	+30	0.7366	0.6544	-11

+: Increase in population; -: Decrease in population

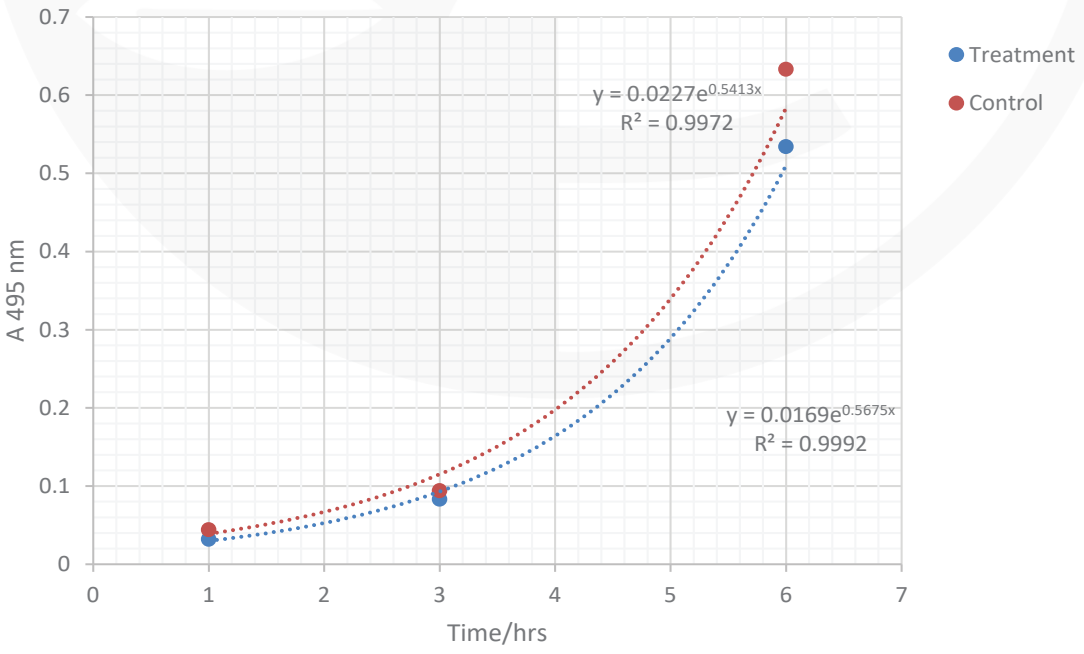
The Erlenmeyer flask culture showed results more consistent with the previously observed reduction in bacterial populations. However, in the tube culture, the results of this method were consistent with the earlier findings and showed a greater increase in the growth of the treated microbial samples compared to the control (compared with the effectiveness results in Tables 2, 3, and 5). Tetrazolium chloride assessment was also performed on the bacterial populations at 1, 3, and 6 hours, and the results are presented in Table 8.

Table 8. Assessment of tetrazolium chloride reduction in the Erlenmeyer flask bacterial culture using absorbance at 495 nm at 1, 3, and 6 hours.

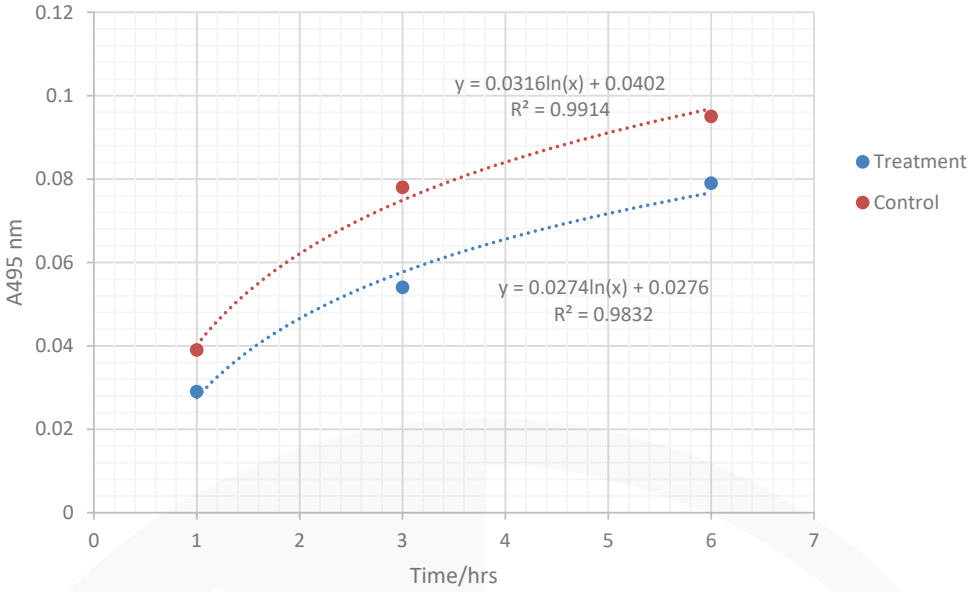
Type of bacteria	Strain	A_{495nm}						Efficacy of treatment (%)		
		1 hour		3 hours		6 hours				
		Control	Treatment	Control	Treatment	Control	Treatment	1h	3h	6h
Laboratory	*E. coli*	0.044	0.032	0.094	0.083	0.633	0.534	-27	-11	-15
	B. subtilis	0.039	0.029	0.078	0.054	0.095	0.079	-25	-30	-17
Nosocomial	*P. aeruginosa*	0.058	0.046	0.085	0.076	0.169	0.134	-20	-10	-20
	S. aureus	0.054	0.037	0.067	0.063	0.094	0.086	-31	-5	-8

The data obtained from tetrazolium chloride reduction over the shorter time intervals in the Erlenmeyer flask conditions are shown in Table 8. Similar to the results observed at the 24-hour time point, a reduction was seen in the samples exposed to the Faradarmani Consciousness Field. The greatest decrease—approximately 30%—was observed in the laboratory strain *B. subtilis* and the clinical strain *S. aureus*.

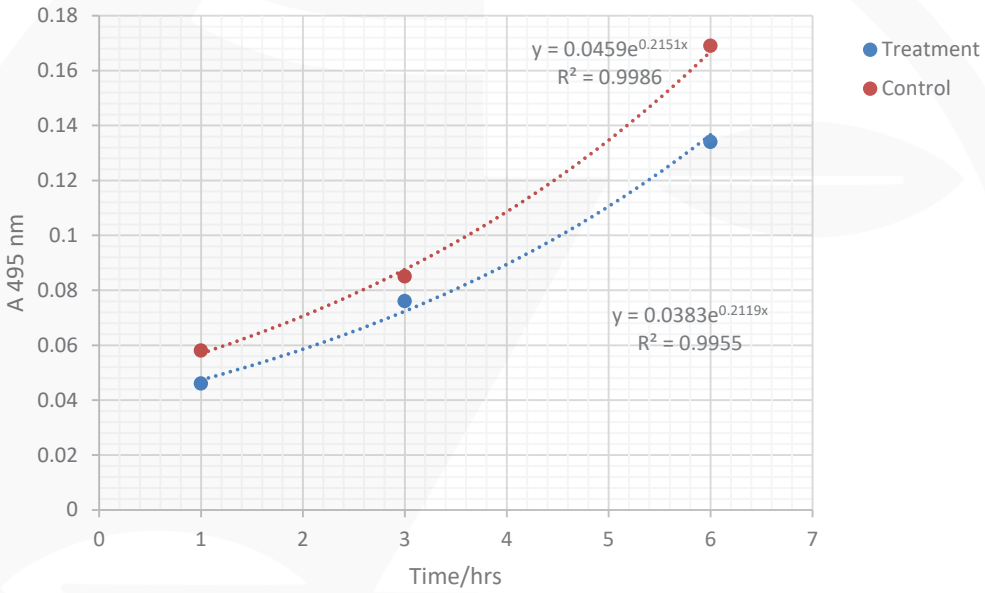
A



B



C



D

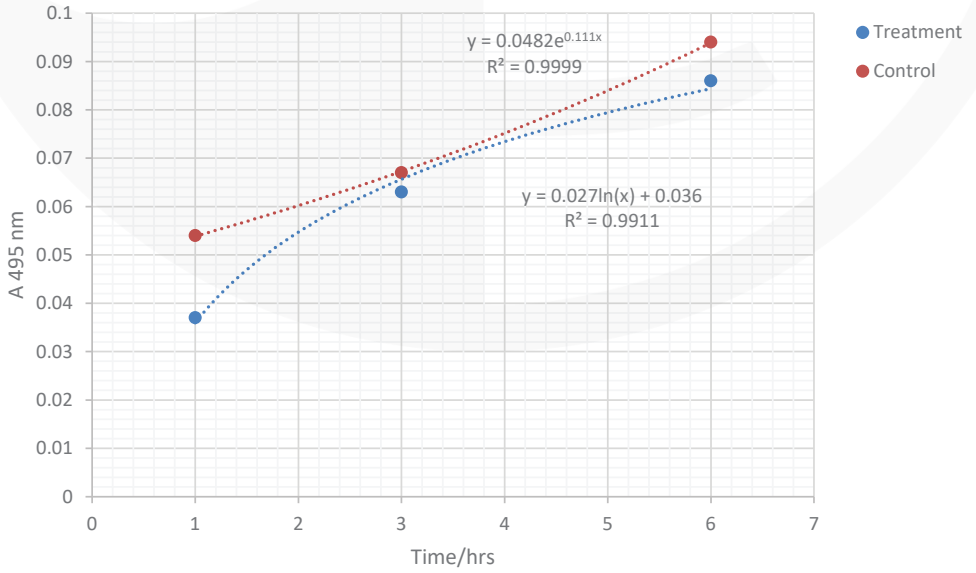


Figure 2. Changes in tetrazolium chloride reduction during the first six hours of the bacterial life cycle in Faradarmani Consciousness Field–treated samples compared with control samples in the Erlenmeyer flask environment. A: *E. coli.* B: *B. subtilis.* C: *P. aeruginosa.* D: *S. aureus.*

Figure 2 shows the exponential and logarithmic plots of the changes in tetrazolium chloride reduction in the control samples and those under the influence of the Faradarmani Consciousness Field. Similar to the data obtained from the other measurement methods for the same strains, we observed a general decrease in metabolic activity in the treated samples grown in the Erlenmeyer flask culture.

Discussion

This study examined the effects of the Faradarmani Consciousness Field, which has a non-frequency nature, on bacterial populations. This influence occurs without any material or physical intervention and begins solely through a short, instantaneous attention toward the treatment samples. The innovative aspect of this study lies in evaluating the effects of this Consciousness Field as a qualitative intervention. In this experiment, multiple laboratory and clinical bacterial strains were used under various culture conditions, including Erlenmeyer flasks and test tubes. Changes in bacterial populations under the influence of the Consciousness Field were recorded and analyzed at different time intervals using various methods and multiple repetitions.

The results obtained from this study provided evidence of the influence of this field across multiple repetitions. One of the most significant challenges regarding theories related to consciousness is the possibility of testing them empirically. The fact that the effects of T-Consciousness Fields can be recorded in a laboratory setting creates a valuable opportunity for researchers to practically investigate the theory of Consciousness Fields. This is especially important because consciousness is often discussed only at the level of humans and brain-bearing organisms, whereas according to Taheri's theory, in addition to humans and animals with brains, microorganisms and even inanimate particles also possess a degree of consciousness.

The results showed a reduction in bacterial population as well as a decrease in bacterial metabolic activity under the influence of the Faradarmani CF. In addition, under culture conditions where the bacteria were grown in test tubes, the field led to an increase in cell viability. This observation suggests that the effect of the Faradarmani Consciousness Field may vary depending on environmental conditions. Therefore, it is necessary to investigate the effect of this field under *in vivo* conditions as well, in order to determine how it influences the growth of microorganisms within living organisms.

To further investigate bacterial populations under the influence of T-Consciousness Fields, we recommend conducting studies on additional bacterial strains, particularly focusing on antibiotic resistance in drug-resistant clinical strains. Considering the repeatability of applying T-Consciousness Fields, we also suggest that researchers explore different types of T-Consciousness Fields to observe potential physiological and metabolic changes in bacteria exposed to these fields.

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