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# The Influence of Faradarmani Consciousness Field on the Survival and Death of MCF-7 Breast Cancer Cells: An Optimization Perspective

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## Abstract

Mohammad Ali Taheri, the founder of the Faradarmani Consciousness Field (CF) maintains that, beyond matter and energy, there exist Taheri Consciousness Fields (TCFs) with a non-frequency nature. It is hypothesized that exposure to these fields may result in an optimization of a subject's structure and function. Apart from the fact that most studies in the field of cancer are aimed at the death of cancer cells, the purpose of this study was to investigate the MCF-7 cancer cell survival and death under the influence of the Faradarmani CF. For the purpose, cellular viability was evaluated by MTT assay for 6-24 h under the influence of the Faradarmani CF. Consequently, cell cycle analysis was performed for the evaluation of apoptotic cell death. Finally, the expression of *Bcl2* and *Bax* genes in MCF-7 cells was evaluated as a completion of the obtained cellular scale results. Our findings demonstrate that the Faradarmani CF treatment significantly induced cell proliferation in the MCF-7 cell culture mediated by increasing cellular viability by about 18% in comparison to the control in a time-dependent manner. Moreover, the S-phase in the cell cycle, as a sign of cell population in the sample treated with the Faradarmani CF, was increased by 56% (up to 24h) in comparison to the control. The real-time RT-PCR reaction results show that in cells treated with the Faradarmani CF, the *Bax/Bcl2* ratio decreased after 24 h (more than the 1-fold negative control (untreated)), suggesting a higher cell survival and resistance to death. Considering the concepts of the TCFs, according to Taheri, proliferation and survival appear to become optimized in MCF-7 cancer cell lines under the influence of the Faradarmani CF.

**Keywords:** *Bax/Bcl2*; Cell cycle; Taheri Consciousness Fields; Cosmic Consciousness Network; Faradarmani Consciousness Field; MCF-7; MTT assay; Survival

**Introduction**

The nature of consciousness, its location, and mechanism of action in humans are largely unmeasurable and unknown (Hameroff and Penrose, 2014). In fact, the concept of consciousness has different definitions and applications in different branches of research, from philosophy, clinical psychology, and neuroscience to cognitive science, quantum physics, and biology. Common fields of study explore the nature of consciousness (Crick and Koch 1998; Modestino 2016; Penfield 1938). For instance, the consciousness nature is studied in philosophy, and also experiences of consciousness at different levels of individual and social life are investigated in psychology. Similarly, the creation of consciousness during information processing at the network level of the nervous system, neurotransmitters and other processes of the cerebral cortex are explored in cognitive neurology.

Investigations of the connection and correlation of consciousness and bodily processes and cognitive disorders in psychoneuroimmunology (Moynihan et al., 2010; Torkamani et al., 2018), psychosomatic disease and processes (Montecucco 2015; Puente 1984) and biofeedback research (Bagdasaryan and Le Van Quyen 2013; Kannape and Blanke 2013) are also frequently reported. Explanation of consciousness by quantum physics keywords (Jahn 1993; Neppe and Close 2015) and its reduction in quantum physics and quantum biology (Hameroff and Penrose 1996, 2014) are more recent approaches in basic science toward understanding the concept of consciousness. In the Orch OR theory, introduced by Penrose and Hameroff (1996), events in the field of consciousness were analyzed in the form of electromagnetic fields caused by molecular structures of the nervous system, related to the fundamentals of quantum mechanics and space–time geometry. According to the concepts of this theory, there is a connection between the brain's biomolecular processes and the basic structure of the universe, relating the brain's structure and function to consciousness in the universe, as published in a review (Hameroff and Penrose, 2014).

According to Chalmers, explaining whether, why and how organisms have experiences of consciousness separate from objective material processes has been termed the hard problem of consciousness (Chalmers, 1995). Different studies tackle the problem of consciousness with different approaches. For example, in the pan-psychic approach, every material, however small, has an element of individual consciousness (Bruntrup and Jaskolla, 2016; Du Toit, 2016). Understanding the relationship between consciousness and the wider dimensions of the universe is covered in numerous studies. Moreover, Ervin Laszlo, in his connectivity hypothesis (Laszlo, 2010) introduces a new Integral science that merges the concepts of consciousness with quantum, cosmos, and life criteria by considering his own concept of "coherence in nature". This time- and space-invariant (nonlocally) coherence causes nonconventional connections between the parts that make up a system as well as between systems and their surrounding environment. He believes that nature comprises connected coherent systems in space, containing physically effective "in-formation", and is as fundamental as energy such that it is also conserved.

Approaches close to the hypothesis of a non-physical nature having consciousness attributions have also been reported (Bruntrup and Jaskolla 2016; Laszlo 2010; Nelson 2006; Radin 2007; Sheldrake 2013). A study in 2000 from the CIA reports the need for separation of consciousness from matter and energy in a "triangular structure" (Shuji, 2000). In this study, consciousness is quantified based on basic mathematical and physical equations.

In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energy nature named T-Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. The influence of these fields is initiated via a short and brief attention to the subject under the study. It is possible to record their effects through conducting laboratory experiments (Taheri, 2013).

Some descriptive (Taheri and Mizani 2013; Taheri 2014) and clinical (Taheri et al., 2011; Taheri et al., 2013a and b; Rahimabadi et al., 2017) studies have been performed to experience the Faradarmani CF applications. Apart from the theory and mechanism

of action of the introduced TCF, it seems that what must first be taken into account is the repetitive influence of TCF on the subjects under the conditions of empirical research, especially in basic sciences. Investigating the apoptotic behavior of cancer cells in their interactions with drugs is one of the common screening mechanisms for drug efficacy and specificity (Pilco-Ferreto and Calaf, 2016; Rahnamay et al., 2018).

On the other hand, considering cancer and its process and also its therapeutic resistance as an evolutionary process have been reviewed in more than 2000 research papers (Aktipis et al., 2011; Merlo et al., 2006). Moreover, studying the effects of the dimensions of consciousness on the growth of cancer cells and its clinical applications have been very limited (Brown 2000; Radin et al., 2015; Zachariae et al., 2005). Also, *in vitro* study of cancer cell line proliferation behavior to be optimized according to its nature has not been reported yet. For this purpose, in the present study, we explore the behavior of MCF-7 cancer cells in controlled growth conditions as well as under the influence of the Faradarmani CF. Finally, the effect of the Faradarmani CF treatment on changes in cell proliferation, cell cycles and apoptosis gene expression were analyzed with respect to the application of the Faradarmani CF and its action.

## Materials and Methods

### Application of Faradarmani CF

Faradarmani Consciousness Field was applied to the samples according to the protocol established by the Cosmointel research center. More details are presented in the general considerations of this issue.

In the present study, we requested an announcement for MCF-7 cancer cells in incubator B, with dishes on the 2nd level, and the first level was kept as the control group. We also specified the time conditions to announcer, i.e. 24, 48, and 72 hours from a set time point. The only relationship between the announcer and the researcher is contractual and related to the sample plate, control plate names and positions in the incubator; for example, the names of the plate A in the upper level of the incubator I and plate B in the lower level of incubator I.

**Spacing condition**: In this study, three spacing conditions were selected between the sample (affected by Faradarmani CF) and control groups.

No. 1- *The middle spacing test*: sample and control cell plates were cultured in the same incubator at 5% $CO_2$ and at 37° C but at different 96 well plate and at distinct separable distances, for example two different incubator levels.

No. 2- *The highest spacing test*: samples were placed in a 96-well plate in an incubator and the control groups were placed in another 96-well plate in a different incubator in different laboratory operating at the same conditions (i.e. 5% $CO_2$ and at 37° C).

No. 3- *The lowest spacing test*: sample and control groups were all in the same 96 well plate in an incubator.

**Timing conditions**: The Faradarmani CF was applied *every one hour* until the end of the experiment which was at 6, 18, and 24 hours from the initial start time. The Faradarmani CF was applied in the three aforementioned spacing test conditions and only to the sample plates. After the end of the testing time, MTT assay, cell cycle distribution, and real time RT-PCR experiments were performed, respectively.

### Cytotoxicity evaluation by MTT assay

The cytotoxic effect of the Faradarmani CF was assessed by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) colorimetric assay. Cells were seeded in 96-well plates (SPL, South Korea) at concentration of $5\times10^3$ cells/ml and were exposed to Faradarmani CF and Doxorubicin (Dox) (as a positive control) for 6, 18, and 24 hours. After 24 hours, 20 µl/well of MTT solution (5 mg/ml) was added and incubated at 37 °C for two hours. The supernatant was then discarded, formazan crystals were solubilized in 150 µl of DMSO/well, and their absorbance was evaluated by the micro-well plate reader (Bio-Tek, Elx 808, USA) at a wavelength of 570 nm.

**Cell cycle distribution analysis**

Flow cytometry was employed to examine the cell phase distribution by identifying the nuclear DNA content. MCF-7 cells ($1.5\times10^5$ cells/ml) were seeded in 12-well plates and treated with the Faradarmani CF and Dox (as a positive control) for 12- 48 hours. Untreated cells were used as a negative control. Briefly, after expiring the incubation period, cells were collected and rinsed in cold 1xPBS, then stained with propidium iodide (20 µg/ml) for 1 hour in the dark. Consequently, cells were sorted in a FACSCalibur flow cytometer (BD Biosciences, San Jose, CA, USA), and the cell cycle proportion was interpreted by FlowJo software (Ashland, OR, USA). Distributions of cells in the G0, G0/G1, S, and G2/M phases were determined as DNA histograms. Apoptotic cells were displayed as a hypodiploid (the sub-G1) peak.

**RNA extraction, cDNA synthesis, and real-time RT-PCR**

After the extraction steps, 1 to 2 µl of extracted RNA from each sample was transferred onto agarose gel to ensure its integrity. In this experiment, two bands related to S28 and S18 ribosomal RNAs are clearly visible due to their high concentration, which indicates the extracted RNAs are healthy and non-degradable during the extraction process.

The total RNAs from *announced/un-announced* MCF-7 cells were extracted after 12-24 hours of treatment using RNX-plus reagent (Cinnagen, Iran), as the manufacturer recommended. The quality and quantity of extracted RNAs were evaluated respectively by using the 1% agarose gel electrophoresis and Nanodrop (Thermo Scientific, USA).

For the synthesis of the complementary DNA (cDNA), 1 µg of total RNA was reverse transcribed using the Prime Script RT reagent kit (Takara Bio, USA) according to the manufacturer's instructions. Subsequently, qRT-PCRs were carried out on step one software using RealQ Plus 2x Master Mix Green High ROX™ (Amplicon, Denmark). The levels of *Bax* and *Bcl-2* were normalized against the housekeeping gene (β-actin) and were expressed relative to the control cells (un-announced). The expression levels of mRNAs were interpreted using the comparative ΔCt method. qPCR primers were synthesized by Oligo (Macrogen, Seoul, South Korea), and their sequences are shown in Table 1. qPCR was performed under the following protocol: one denaturation cycle of 95ºC for 5 min, followed by 40 amplification cycles of 95º C for 30 sec, 60-64ºC for 30 sec, 72ºC for 30 sec and a final extension of 72˚C for 5 min. Each individual run was followed by a melting curve analysis to evaluate the amplification specificity and lacking primer dimers. Additionally, the amplification efficiency for each primer was calculated by LinRegPCR 2017.9 version.

Table 1. Primer sequences used in real-time PCR.

| Gene name | Forward and Reverse Primers (5′-3′) | Annealing Temp. (º C) | Amplicon size (bp) |
|---|---|---|---|
| *β-actin* | F: AGAGCTACGAGCTGCCTGAC<br>R: AGCACTGTGTTGGCGTACAG | 58 | 184 |
| *Bax* | F: GCAAACTGGTGCTCAAGG<br>R: ACTCCCGCCACAAAGA | 64 | 187 |
| *Bcl2* | F: TGGGAAGTTTCAAATCAGC<br>R: GCATTCTTGGACGAGGG | 64 | 297 |

F = Forward; R = Reverse

**Statistical analysis**

All values in the present study are expressed as mean ± SD, calculated from three independent experiments. Statistical analysis was done using GraphPad Prism with two-way analysis of variance (ANOVA), and Tukey multiple comparison tests and $p < 0.05$ are considered statistically significant.

**Results**

**MTT assay**

Images from MCF-7 cells in each group of the present study are in Fig 1. Fig 1.D shows the Faradarmani CF applied to MCF-7 cells, in comparison with the negative control group in the same conditions, at 18 and 24-hours treatment with a significant increase in cell viability. It can be noted that the cells in the positive control group treated with Dox, as a positive control, also show a significant decrease in cell viability at 24 hours. Furthermore, the changes in the cell viability of the treated cells with 10% FBS were not significant at either of the study times.

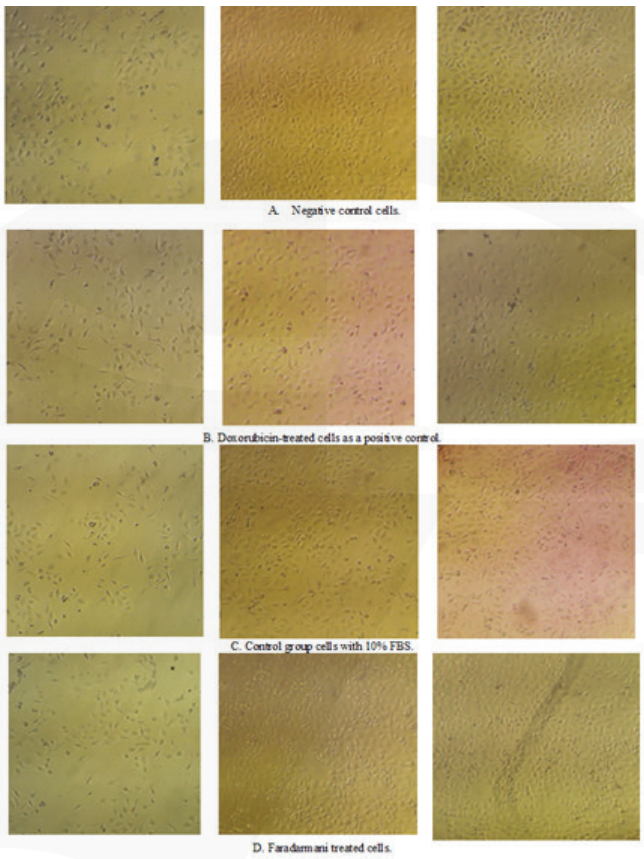



Figure 1. MCF-7 cells in each group at 6h (left), 18h (middle) and 24h (right) treatment. A: Negative control cells; B: Doxorubicin-treated positive control cells; C: 10% FBS control cells. D: Faradarmani CF treated cells.

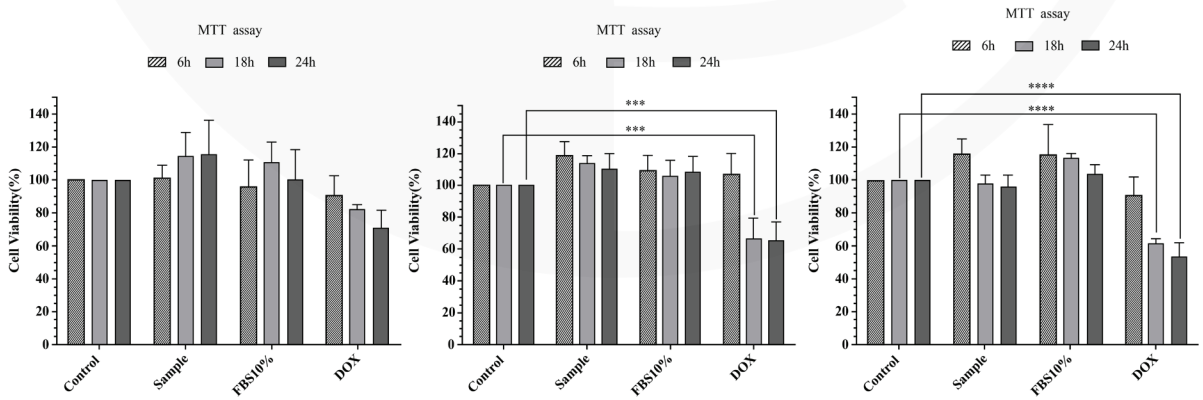



Figure 2. The diagram of samples treated with Faradarmani CF (sample), Dox (positive control), and dietary factor (FBS 10%) compared to the untreated or negative control (control), evaluated by MTT test at three treatment times of 6, 18, and 24 hours in the three spacing test conditions. Right: No.1 spacing test condition; middle: No.2 spacing test condition; left: No. 3 spacing test condition. The data are indicated as the mean ± SD of three individual trials. Stars show the level of significance from three independent samples t-test (*P < 0.05, **P < 0.01, ***P < 0.001, ns: not significant).

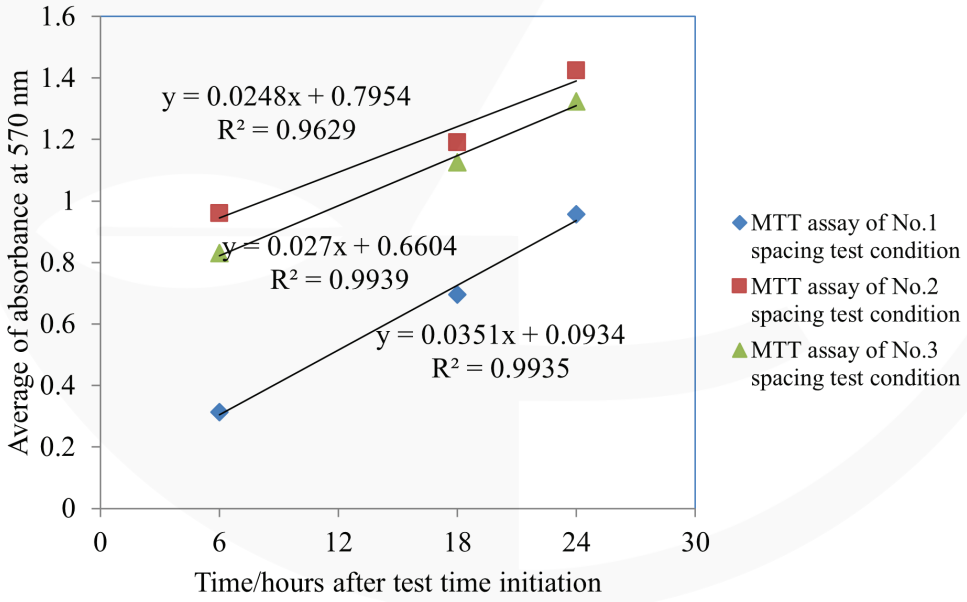
In the spacing test conditions of No. 2 and No. 3, none of the changes in cell viability is significant in the samples under Faradarmani CF and FBS 10% treatments. In contrast, there are decreases in cell viability of the positive control (Dox) at 18 and 24 hours in spacing test conditions No.2 and No.3, with p-values < 0.01 and < 0.001, respectively (Fig 2).

**Population changes trends in all test groups during the first 24 hours after test initiation**

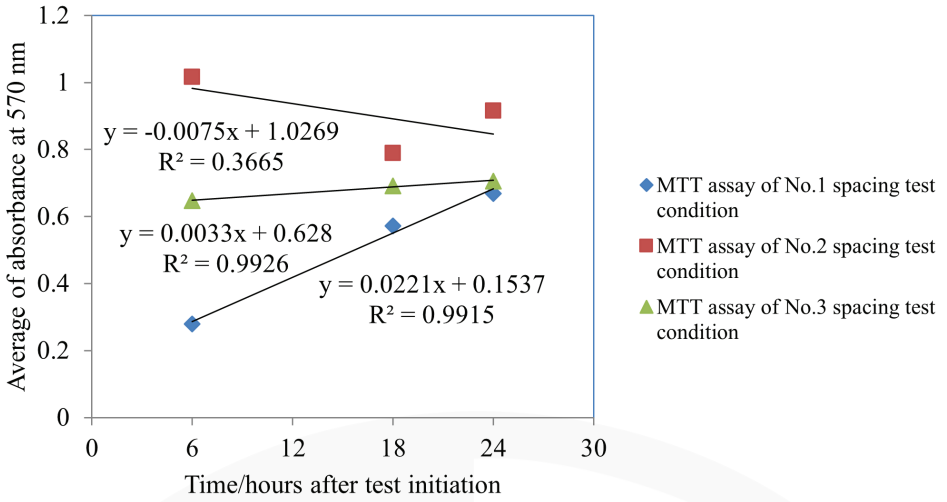
Figure 3 shows the analyses of the cell population viability changes in each study group (controls and sample) compared with one another in three spacing test conditions. As presented in Figure 3A, the slope of increase in negative control cell viability in spacing test condition No. 1 is approximately 32% and 30% more than the No. 2 and No. 3 spacing test conditions, respectively. Figure 3B shows that the slope of increase in population decreases at 37% in test condition No.1 compared with negative control. Moreover, this increase under treatment of Dox suggests the lowest drug efficacy in the No.1 spacing test condition in comparison with two other spacing test conditions. The highest efficacy of Dox treatment is observed in the No. 2 spacing test condition.

As indicated in Figure 3C, cell viability is increased in positive control groups in the No.1 spacing test condition at approximately 3.8% lower than the negative control, not a significant number. However, the increase is 31% and 92% higher than No.2 and No. 3 spacing test conditions, respectively.

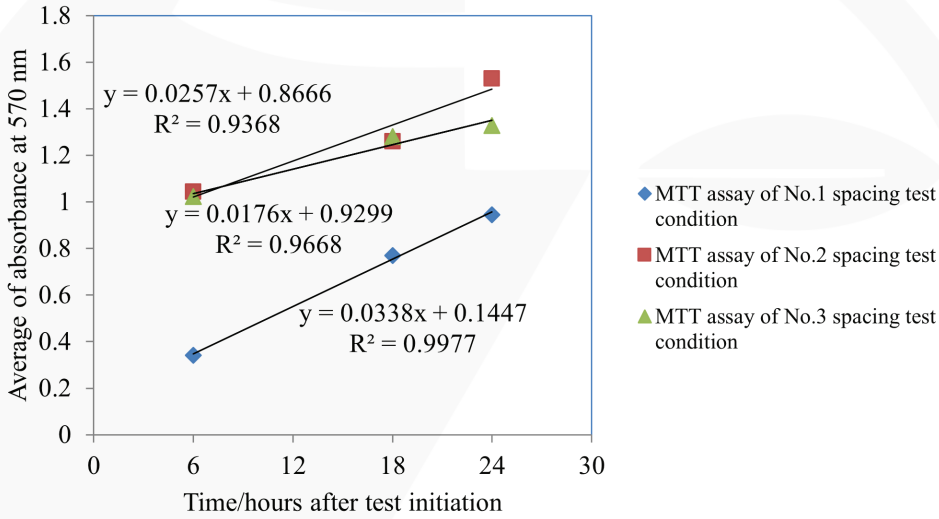
As shown in Fig 3D, the No.1 test condition with a 41% higher slope of the population is increased in comparison with negative control, showing the highest rate of increase in cell viability 24 hours after test initiation. While this increase in two other spacing test conditions is lower than according to the negative control.



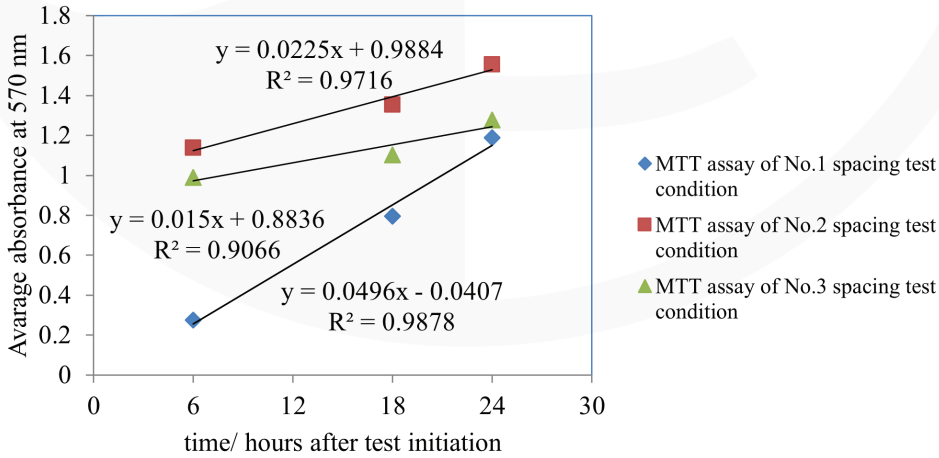

A. The MCF-7 cell viability increased in negative controls groups.




B. The MCF-7 cell viability changed under Doxorubicin (Dox) treatment (positive control).




C. The MCF-7 cell viability increased in FEB 10%.




D. The MCF-7 cell viability increased in the sample groups (with Faradarmani CF treatment).

Figure 3. Cell population viability changes in each study group (controls and sample) compared with one another in three spacing test conditions. A) Negative control cells; B) Doxorubicin-treated positive control cells; C) 10% FBS control cells. D) Faradarmani CF treated cells. Blue diamond: MTT assay of No. 1 spacing test. Red cube: MTT assay of No. 2 spacing test. Green triangle: MTT assay of No. 3 spacing test.

**Flow cytometry**

In the No.1 spacing test condition, MCF-7 cells are treated in order to investigate the effect of the desired treatment at different cell cycle stages. In the negative control, most of the population is in the G0/G1 phase (Fig 4A). After treatment with DOX-positive control cells, the cell population in the SubG1 phase increases significantly in a time-dependent manner compared to the control (Fig 5). The accumulation of cells in this region indicates the induction of apoptotic cell death in the cells.

However, there are no significant changes in the SubG1 phase cell population in cells treated with Faradarmani CF (Fig 4C) and in cells treated with more nutrients (FBS) (Fig 4B). In contrast, cells treated with Faradarmani CF show a 56% increase (up to 24h) in the S phase compared with control (Fig 5). These data are consistent with the data from the drug toxicity test (MTT assay), suggesting growth inhibition and cell death in Dox-treated cells and increased growth and viability in the Faradarmani CF cells.

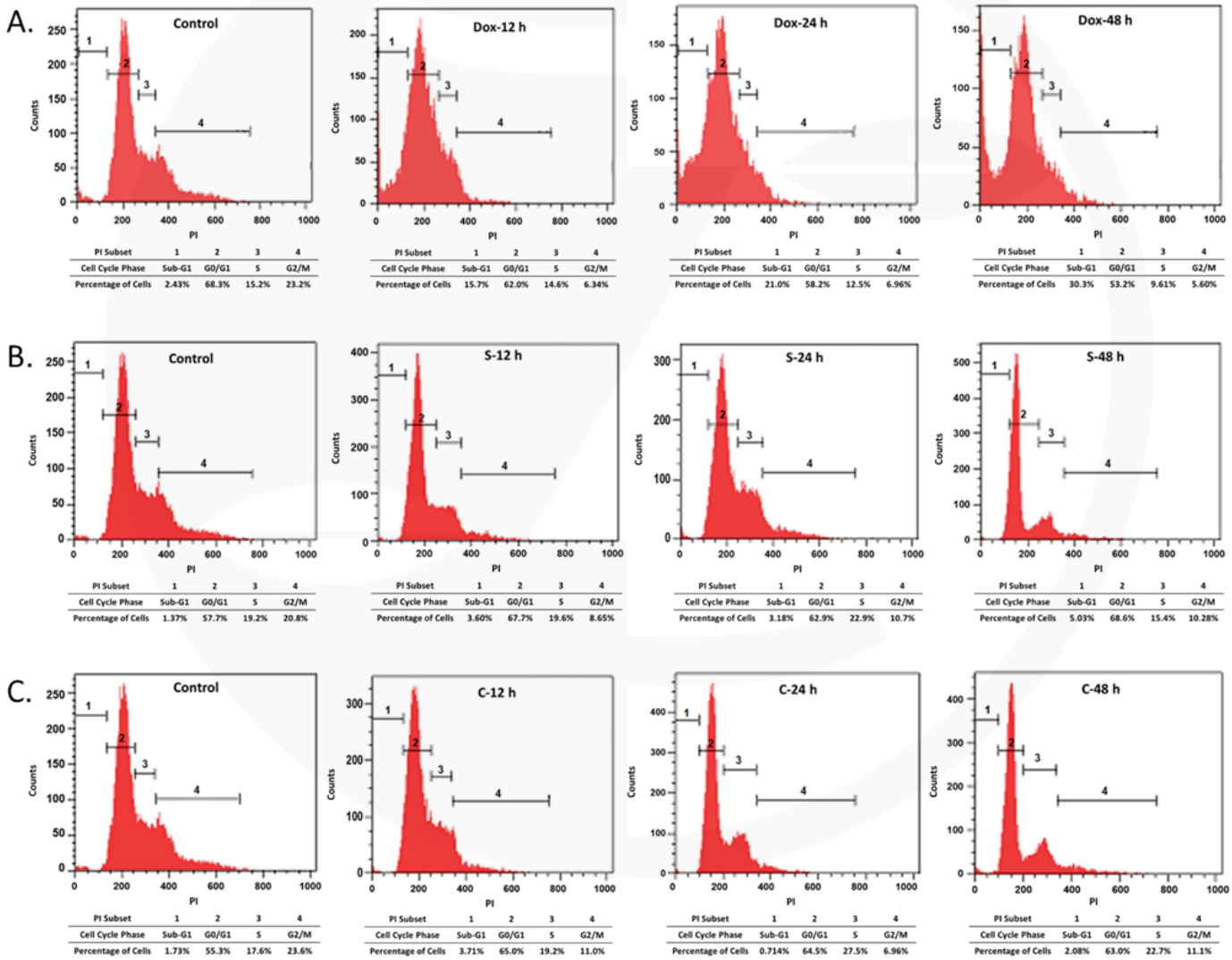



Figure 4. Cell cycle at different stages in each group of study; A. DOX-treated cells; B. FEB 10% -treated cells; C. Faradarmani CF-treated cells. All groups were compared with the negative control.

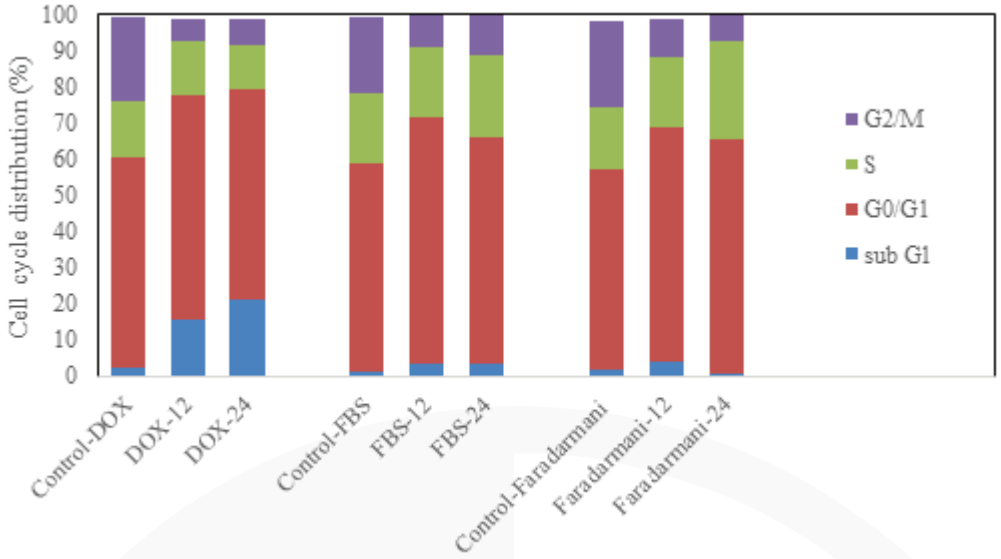



Figure 5. Cell cycle distribution of sample and controls up to 24h.

## Gene expression analyses for *Bcl2 and Bax* genes

The expression of *Bax* and *Bcl-2* pro-and anti-apoptotic members of the *Bcl2* family were examined. The results of the real-time RT-PCR demonstrate that in the cells treated with Faradarmani CF in the No.1 spacing test condition, the *Bax/Bcl2* ratio was decreased after 24 hours (more than 1-fold as compared with the negative control), indicating improved cell survival and resistance to cell death. However, in cells treated with Dox as a positive control, the *Bax/Bcl2* ratio was significantly increased (more than 10-fold compared to the negative control), which induced apoptotic cell death (Fig 7). These data show that the Faradarmani CF results in a gradual time-dependent decrease in the ratio of *Bax/Bcl2* transcripts.

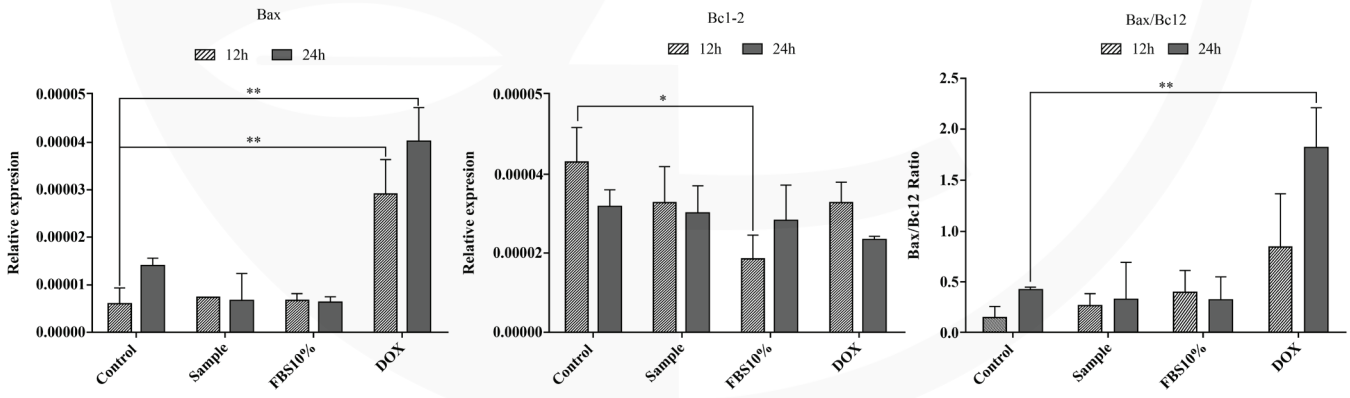



Figure 6. The expression changes of *Bax, Bcl2* genes in MCF-7 cells treated with Faradarmani CF (sample), Dox (positive control) and dietary factor (FBS 10%) compared to untreated or negative control cells. The cells were treated for 12-24 h and relative expression levels were measured by real-time RT-PCR. (*p <0.05, **p <0.001)

## Discussion

In this study, using MCF-7 cell line, the hypothesize of the effectiveness of Faradarmani Consciousness Field was evaluated. According to Taheri, when a subject is affected by this field, it is possible that the behavior of the treated sample alters compared to the control (without field). The current study provides evidence of this effect.

In this experiment, three selective intervals between samples and controls were considered. Cells were monitored for proliferation, apoptosis, and cell cycle expression of genes related to cell death and survival. By examining the overall variations of cell populations compared to the own control state in each distance test, it is found that MCF-7 cancer cells gained more proliferation and survival at the middle distance (No. 1 condition) selected in this study because of Faradarmani CF treatment. On the other hand, by comparing changes in the cell populations of each group at three selective intervals between the sample and control groups, we find that the spatial condition has a significant additive effect on the growth conditions of the negative and positive control groups. Moreover, Faradarmani CF also increases resistance to toxicity, as shown in the MCF-7 cells treated with Dox. This significant incremental effect of the Faradarmani CF on cell populations was also demonstrated by cell cycle assays showing increased expression of survival genes. Three key points can be extrapolated from these results. First, Faradarmani CF affects cells at the cellular and molecular levels. Second, the MCF-7 cell line showed an enhancement in survival under the influence of Faradarmani. Lastly, it seems that the space between treated samples and controls can affect the obtained results. It is worth mentioning that according to Taheri, information transmitted by TCFs to the samples leads to cellular changes. In this experiment the cells were in the *in vitro* condition, to complete the evidence of the effects of TCFs, conducting more experiments in *in vivo* and *ex vivo* conditions is on the agenda of the authors of this study. It is expected that information transmitted from these fields alter based on different culture and experimental conditions. It is suggested that survival and death analyses of other cells, either cell lines or primary cells, be done to study the effect of Faradarmani CF on cancer cell behavior.

Data are available in Harvard Dataverse: https://doi.org/10.7910/DVN/UBC7FG.

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