

Investigating the Effect of Faradarmani Consciousness Field on Breast Cancer Cells (MDA-MB-231)

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Abstract

Breast cancer is the most common form of malignancy among women worldwide and is a multifactorial disease in the development of which various factors are involved. Faradarmani Consciousness Field (FCF) was introduced by Mohammad Ali Taheri as one of many Consciousness Fields that are neither energy nor matter, nor are they quantifiable, thus they cannot be directly observed or measured. However, it is possible to evaluate their effects indirectly through controlled experiments in the laboratory. This study aimed to investigate the effect of FCF on breast cancer cells (MDA-MB-231) measured by flow cytometry methods at 24 hours. To determine the cell death in the sample treated with FCF and compare it with the control, cells were stained with Annexin-V and propidium iodide (PI). Our results showed at 24 hours, the percentage of early and delayed apoptosis and total apoptosis and necrosis in the sample under the influence of the FCF compared to the control cell lines increased by 5.92 %, 3.49 %, 9.41 % and 4.68 % respectively. Finally, the rate of programmed death of cancer cells increased up to 9.41 % under the effect of this field in the cell line in this study.

Keywords: Breast cancer; Taheri Consciousness Fields; Faradarmani; Cancer cells

Introduction

Breast cancer is one of the most common cancers among women. According to the statistics of the World Health Organization, breast cancer includes about 30% of cancers among women. About 1.2 million women are affected by this disease every year. This type of cancer is reported to be the second leading cause of cancer-related deaths in women after lung cancer. It has been estimated that the prevalence of breast cancer will increase from two million patients in 2018 to more than three million patients in 2046, which represents an increase of 46% (Sung et al., 2021; Siegel et al., 2019).

Breast cancer is a disease in which malignant cells originate from the breast tissue and multiply irregularly and increasingly. These cells often originate from mammary tissues, covering cells, milk ducts, and lobules around the ducts (lobular) (Shah et al., 2014). The MDA-MB-231 cell line is related to breast cancer, and in terms of morphology, it is epithelial and spindle-shaped. The invasive power of this cell line is mediated through the ability to proteolytically alter the extracellular matrix (Chavez et al., 2010; Łukasiewicz et al., 2021). This study aimed to investigate the effect of the Faradarmani Consciousness Field on breast cancer cells (MDA-MB-231).

Materials and Methods

Application of Faradarmani CF

In this study, MDA-MB-231 cells were exposed to Faradarmani Consciousness Field (FCF) once from the start to the end of study (24 hours). Also, MDA-MB-231 cells, which were not exposed to FCF fields, were considered as the control group.

Cell culture

In this research, the MDA-MB-231 breast cancer cell line, obtained from the cell bank of the Pasteur Institute of Iran, was used. The cells were cultured in DMEM (Dulbecco's Modified

Eagle Medium) (Gibco, USA) supplemented with 2 mM L-glutamine enriched, fetal bovine serum (FBS) (Gibco, USA) and 1% Penicillin/streptomycin antibiotic solution (Biosera, France) under controlled conditions of 37°C and 5% CO₂. The cells grew as a monolayer in the flask. This culture medium was changed three times a week, and sterile trypsin-EDTA solution was used to harvest the cells.

Flow cytometry

To determine the percentage of apoptotic cells in a cell population treated with FCF and compare it with the control cell population, cells were stained with Annexin-V and propidium iodide (PI) (Sigma-Aldrich, Germany). After treatment of the cells with FCF at 24 hours, the cells were trypsinized and washed with sterile phosphate-buffered saline (PBS). 100 microliters of binding buffer were added to the sediment resulting from the centrifugation of the cells in a 1.5 ml microtube. Next, 10 microliters of PI and 5 microliters of Annexin-V were added to the tube. The contents were gently mixed by manually shaking the microtube to ensure the cell pellet was fully resuspended. In the next step, the samples were incubated at room temperature (25°C) for ten minutes in the darkness. Finally, cell analysis was performed by flow cytometry (BD Biosciences, San Diego, CA, USA). Data analysis was done by using the software of the device and dividing the points recorded in the two-dimensional curve into four regions Q1 to Q4. To assess the effect of FCF on apoptosis and necrosis, the percentage of cells in each quadrant was calculated and reported using the flow cytometry analysis software (FCS Express).

Statistical analysis

GraphPad Prism 9 and SPSS version 2016 were used for statistical calculations. The collected data were analyzed using one-way ANOVA followed by Tukey's post hoc test. Assays were repeated three times. A p-value of less than 0.05 was considered statistically significant.

Results and discussion

According to the results of Table 1, a statistically significant relationship was observed between the control group and the group under the effect of FCF treatment ($P < 0.001$). The results showed

that the percentage of early and late apoptosis and total apoptosis and necrosis increased in the cell lines treated with FCF compared to the control (Figure 1).

Table 1. Effect of FCF on apoptosis in MDA-MB-231 cells in treated and control groups at 24-hour interval. Percentage of necrotic cells (Q1), percentage of late apoptotic cells (Q2), percentage of primary apoptotic cells (Q3) and percentage of viable cells (Q4).

	Q1	Q2	Q3	Q2+Q3	Q4
Control (-)	3.72%	0.93%	4.68%	5.61%	90.7%
FCF	8.40%	4.42%	10.6%	15.02%	76.6%
Difference of FCF from negative control	4.68%	3.49%	5.92%	9.41%	14.1%

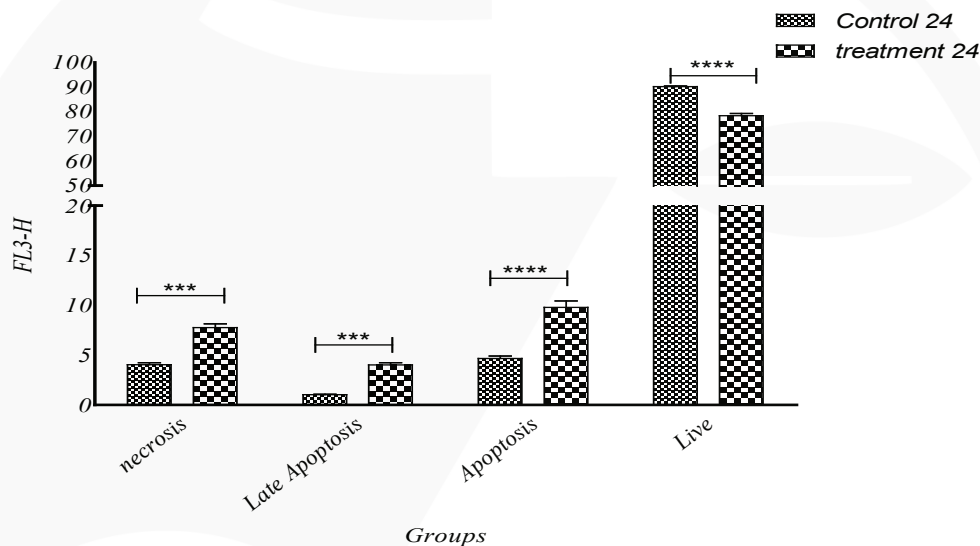


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Previously, it has already been found that the behavior of cell lines can change depending on their growth environment. For example, an enhancement of growth can be observed under two-dimensional or *in vitro* conditions (Taheri et al., 2022a). While, in mice or *in vivo* model an inhibition of metastasis has been reported (Taheri et al., 2022b). In addition to the studies on cell lines, in microbiology experiments, it has been observed that virus replication increased under the influence of this field, whereas, in rat model, FCF improved the immune response induced by an inactivated vaccine against Foot and Mouth disease (FMD) (Taheri et al., 2022c).

The findings of this study on the MDA-MB 231 cell line indicate that FCF can reduce the survival of this cell line and increase the programmed death. Completion of this experiment using the MTT assay, as well as assessing cell viability through flow cytometry at 48- and 72-hour time intervals, is planned by the authors of this study. As a next step, we suggest that in future studies, the effect of FCF on the level of expression of apoptosis-inducing molecules such as Fas (CD95) be investigated. Also, effects of this field on the behavior of various cell lines be investigated and compared in different environment, including two and three-dimensional cell cultures and *in vivo* models.

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