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Investigation of the Effects of T-Consciousness Fields on Alzheimer's Disease, Infertility and Skin Allograft: *In-vitro* and *In-vivo* Models

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Originator of T-Consciousness Theory
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Editorial

Mohammad Ali Taheri
Founder of T-Consciousness Theory

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Humankind has always sought ways to increase lifespan, reduce pain and illness, and improve quality of life. In addition to modern medicine, which has made significant contributions in this regard, various complementary therapies have been introduced worldwide. The choice of treatment methods has also faced numerous challenges. For example, even the use of natural and herbal substances, while showing some effectiveness, has also been accompanied by side effects. Therefore, according to global regulations, before the safety of any clinical method is approved for human use, it is necessary to conduct pre-clinical studies and various tests on laboratory and animal models.

Various theories about consciousness have been proposed worldwide. It is one of the most complex topics across a wide range of scientific fields, from physics and neuroscience to psychology. The greatest challenge in understanding this phenomenon lies in conducting experimental studies. In other words, how can a subjective experience be examined objectively? Two main approaches have attempted to address this question. The local perspective views consciousness as a product of neuronal and brain activity, while the non-local perspective considers consciousness as something beyond the physical brain, on a cosmic scale.

In the 1980s, Mohammad Ali Taheri introduced the T-Consciousness theory, which has opened a new horizon for contemporary humanity. According to this perspective, T-Consciousness is a non-physical essence that is a fundamental element of the cosmos. Moreover, there are various T-Consciousness fields with different functions, all of which are subsets of the Whole T-Consciousness or the Cosmic Consciousness Network. The Faradarmani TCF is one such field, introduced as a complementary therapy. The most significant distinction of Taheri's theory compared to other theories in the field of consciousness is the ability to practically test the T-Consciousness fields, offering a valuable opportunity for researchers in this domain.

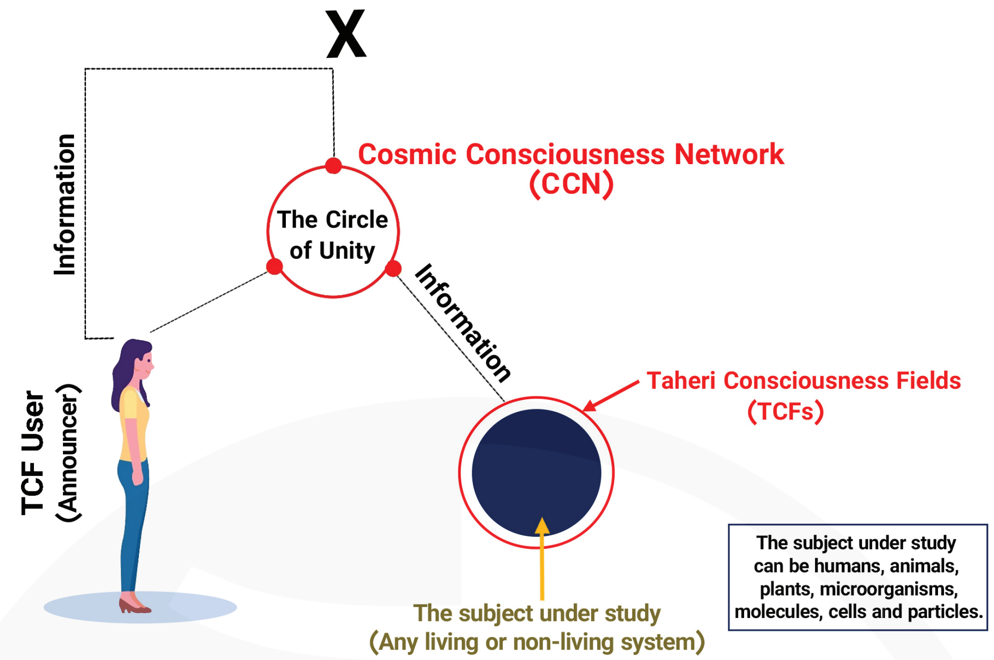
The complementary therapies introduced in this theory work based on the influence of TCFs. Notably, the effect of these fields does not require any physical intervention or the use of special materials. Therefore, this treatment poses no side effects for patients or users. In this process, the human mind acts as an intermediary in connecting with the TCFs. Unlike other mind-based methods, such as meditation and mindfulness, engaging with these fields does not require belief, indoctrination, or the use of special techniques like controlled breathing and so on. Upon exposure to TCFs, the necessary information is transmitted and influences the individual or subjects under study.

In the current issue, in addition to Faradarmani, the effects of several TCFs have been tested. For example, in one article, three types of TCFs were examined, yielding different results. This suggests that distinct information was transmitted under the influence of each TCF. Moreover, these experiments show that the effects of Faradarmani as a complementary therapy, along with other TCFs, are independent of human intelligence and knowledge. As mentioned, the user (Faradarmani Practitioner) acts only as an announcer. This distinguishes T-Consciousness theory from other well-known methods based on mind-body interactions. For example, to our knowledge, no animal model experiments have tested the effects of meditation or similar techniques, because these methods rely heavily on the mind and intention of individuals—abilities that animals and plants lack. In contrast, TCFs can be applied to inanimate objects, such as metals. Overall, the results presented in this issue provide evidence of the effects of TCFs and pave the way for further investigation in this area.

Regarding the content of this issue, it is important to note that the recent articles titled "*Effects of T-Consciousness Fields on Mouse Oocyte Maturation and Embryo Development Following IVF*" and "*Effect of T-Consciousness Fields on Skin Allograft Survival in Rats*" were presented at the 30th Annual Science of Consciousness Conference, held from April 22-27, 2024. This international, interdisciplinary event, sponsored by the University of Arizona, focuses on the mysteries of consciousness. The videos of the presentations can be found on our YouTube page dedicated to the said conference[1,2]. Additionally, a summary of the results from the scopolamine model of Alzheimer's disease was published in this journal on May 9, 2022, and the full article will also be included here. Additionally, an abstract of the article "*Influence of Faradarmani Consciousness Field on Spatial Memory and Passive Avoidance Behavior in a Scopolamine Model of Alzheimer's Disease in Male Wistar Rats*" was published in this journal on May 22, 2022[3].

Thanks to the efforts of researchers, numerous studies in various scientific fields are being conducted across different countries. The results of these studies will gradually be published in upcoming issues of the Journal of CosmoIntel. It is hoped that, with the growth of global awareness and the dedication of unbiased and impartial researchers, more theoretical and practical advancements in the T-Consciousness Fields theory will be achieved over time.

1. https://youtu.be/iqbjKbLum0U?si=v4xOp-paF6-T7nFo
2. https://youtu.be/I7DHewfdVQs?si=Xni7y4JbYV7X3e0J
3. Mohammad Ali Taheri, Sara Torabi, Noushin Nabavi, & Farid Semsarha. (2022). Influence of Faradarmani Consciousness Field (CF) on Spatial Memory and Passive Avoidance Behavior of Scopolamine Model of Alzheimer Disease in Male Wistar Rats. *The Scientific Journal of Cosmointel, 1*(2), 75. https://doi.org/10.61450/joci.v1i2.71



A schematic on applying T-Consciousness Fields (TCFs). The effect of TCFs begins with connecting to the Cosmic Consciousness Network (CCN) and through the TCFs user (announcer). Variable T-Consciousness Fields are a subset of CCN, and by applying each TCF, specific information is transmitted. In this way, the subject of study, which can be living or non-living creatures, is exposed to this information. It should be noted that TCFs and the information do not have a material or energetic nature; therefore, they cannot be measured directly and quantitatively. However, it is possible to record and examine their effects by designing different experiments. For this purpose, the behavior or indicators measured by the researchers in the subject under study after being exposed to the TCFs are compared with the control samples (without the effect of TCFs), and the results are reported after statistical analysis.

Considerations of This Issue

1. Introduction

1.1 T-Consciousness and the New Science of Sciencefact

In the present century, the nature of Consciousness and its place in science has received much attention. Many philosophical and scientific theories have been presented in this field. In the 1980s, Mohammad Ali Taheri introduced new fields with non-material and non-energetic nature, which are called T-Consciousness Fields (TCFs). In this view, T-Consciousness along with matter and energy are the three main elements of the universe and it is different from the other two elements. According to this theory, there are various TCFs with different functions that are a subcategory of the Cosmic Internet Network called the Cosmic Consciousness Network (CCN).

The main difference between the theory of T-Consciousness Fields and other theoretical concepts presented in relation to consciousness is the application and practical use of TCFs. These fields can be applied to all living and non-living organisms, such as plants, animals, microorganisms, materials, etc. The new science of *Sciencefact* was introduced in 2020 by Mohammad Ali Taheri, the founder of the Erfan-e-Keyhani-e-Halgheh school, as one of the subgroups of this school. The name "Sciencefact" was chosen because it uses scientific research to confirm the existence of T-Consciousness as a "fact". Although conventional science only considers the study of matter and energy, *Sciencefact* investigates the effects of T-Consciousness Fields, with non-physical entity, on matter and energy and all their manifestations (such as humans, animals, plants, microorganisms, cells, materials, etc.). By conducting repeatable laboratory research in various fields of science, Sciencefact has emerged as a common ground between them and uses this capability to investigate "T-Consciousness" and "T-Consciousness Fields" resulting from it.

The influence of the T-Consciousness Fields begins with the connection (*Etesal*) between the Cosmic Consciousness Network as the Whole Consciousness and the subject under study as a component. The connection is established by the mind of the *Faradarmangar* (a person who has been trained and assigned the T-Consciousness Fields). The human mind has the role of an intermediary (announcer) that acts with short and immediate attention to the subject of study, and the main achievement is achieved as a result of the effects of the T-Consciousness Fields. These fields cannot be directly measured by science, but their effects on various subjects can be investigated through repeatable experiments.

1.2 Taheri's Research Methodology of T-Consciousness Fields

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.

1.3 Study phases in Sciencefact

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 energy.
Finally, Phase-4 draws significant conclusions, particularly with regard to the mind and memory of matter and their relation to the T-Consciousness, etc.

2. Methods Using T-Consciousness Fields

The samples under study were subjected to T-Consciousness Fields (TCFs) according to the specified protocol on the website of Research Management on TCFs (www.cosmointel.com). The request for *Etesal* (connection) to the Cosmic Consciousness Network to use TCFs can be submitted through the Cosmointel website in the "Assign Announcement" section. This access is freely available to everyone. Researchers can register on this website anytime to experience TCFs and conduct research in this area. Detailed information about the experiment needs to be provided to the research center; for example, the number and name of samples and controls must be specified.

These studies were conducted in a double-blind manner, where lab technicians were completely unaware of TCFs theory, and the Faradarmangar at the COSMOintel research center who established the consciousness bond was unaware of the details of the study (except for the use of TCF 2, which requires knowing the details of subjects under study). Double-blindness is a gold standard that is common in science experiments in the field of medicine and psychology, involving theoretical and practical testing. Several types of TCFs were examined in the presented articles of this issue, including Faradarmani Consciousness Field (TCF1), Zehn-e-Eshteraki (TCF2), Tashasho-e-Defaee (TCF3) and T-Consciousness Charge.

Effects of T-Consciousness Fields on Mouse Oocyte Maturation and Embryo Development Following IVF

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Abstract

T-Consciousness Fields (TCFs) with non-material and non-energetic entities have been introduced by Taheri. The influence of TCFs can be investigated through laboratory experiments. In this study, two separate works were conducted to evaluate the effects of TCFs on the *in vitro* maturation of mouse oocytes (IVM), mitochondrial membrane potential and embryo development through *in vitro* fertilization (IVF). In the first experiment, after 24 hours, the maturation of oocytes either in the presence or absence of TCFs was observed using an inverted microscope and the mitochondrial membrane potential of MII oocytes was estimated through JC-1-aggregate fluorescence intensity. In the second experiment, the effects of TCFs on the rate of fertilization and 2PN zygotes and the grades of embryos were evaluated. The results showed that the maturation of oocytes under TCFs treatment increased by an average of 33% compared to the control (p-value<0.05), and the MII oocytes had a higher mitochondrial membrane potential under the influence of TCF1 (p-value<0.05) and TCF3 (p-value<0.01), suggesting their better efficiency. Moreover, TCFs increased the probability of 2PN zygotes by about 12% compared to the control (p-value=0.0090). Furthermore, TCFs-treated samples exhibited a notable 45% reduction in grade BC (p-value<0.05). Additionally, the percentage of grades A and B of oocytes was more than two times (p-value <0.05) higher than the control. In conclusion, these results provide preliminary evidence of the positive effects of TCFs treatment on fertilization and pave the way for further research in this area.

Keywords: Consciousness; Oocyte; embryo; mouse; maturation; fertilization

Introduction

Infertility is a medical condition defined by the inability to achieve a clinical pregnancy despite 12 months of consistent and unprotected sexual activity. It is estimated that approximately 8 to 12% of couples are suffering from this issue all around the world (Ombelet, 2020; Vander Borght and Wyns, 2018). Generally, aside from unexplained reasons that it affects 15% of couples and about 85% of infertility cases arise from ovulatory dysfunction, male factor infertility, and tubal disease (Ameratunga et al., 2023; Carson and Kallen, 2021; Guideline Group on Unexplained Infertility et al., 2023; Teede et al., 2023). Additionally, lifestyle and environmental factors, such as smoking and obesity, can have a detrimental effect on fertility as well as endocrine disturbances (Ameratunga et al., 2023; Bala et al. 2021; Emokpae and Brown 202; Chai et al., 2023; Linehan et al., 2022; Malekpour et al., 2023; Tzeng et al., 2023).

Assisted reproductive technology (ART) has facilitated the treatment of infertility over the past three decades, resulting in the birth of millions of children worldwide (Glujovsky et al., 2023; Ono et al., 2023; Pinborg et al., 2023; Sachs-Guedj et al., 2023). Although *in vitro* fertilization (IVF) with ovarian hyperstimulation is an appropriate option for many couples, this treatment may not be suitable for some patients such as those women with high antral follicle count (AFC) and polycystic ovary syndrome (PCOS) (Das and Son, 2023; Meneghini et al., 2023; Sachs-Guedj et al., 2023; Wesevich et al., 2023;Thakre and Homburg, 2019). In these cases, IVM is an alternative way, which involves the process of oocyte maturation *in vitro* without prior gonadotrophin stimulation (Das and Son, 2023; Zhang et al., 2023; Coticchio, 2016).

Consciousness is described as an elusive phenomenon, and it has been stated that no scientific theory can truly explain it (Markkula, 2015; Polák and Marvan, 2018; Schurger and Graziano, 2022). The most popular explanations about consciousness have been presented by neuroscience, such as global neuronal workspace (Luczak and Kubo, 2021; Owen et al., 2023; Rabuffo et al., 2022; Mashour et al., 2020), integrated information theory (Albantakis et al., 2023; Barbosa et al., 2021; Tononi et al., 2016) and higher-order thought theory (Arsiwalla et al., 2023; Ludwig, 2022; Revach and Salti, 2022). Historically, while dualism describes consciousness as a non-physical entity separate from the physical body, physicalism views it as an integral part of the material world. Additionally, panpsychism posits that consciousness is inherent in all things (Hoffman et al., 2023; Sanfey, 2023; Goff, 2017).

In the 1980s, Mohammad Ali Taheri introduced consciousness as a fundamental element of the universe from which information, matter and energy spring forth. In this context, we refer to this form of consciousness as ‘T-Consciousness’ to differentiate it from other conventional theories. According to this perspective, there are various T-Consciousness Fields (TCFs) with different functions, which are the subcategories of a networked universal internet called the Cosmic Consciousness Network (CCN) (Taheri, 2013). One of the unique aspects of this theory is its applicable features. These fields can be examined through reproducible experiments. Indeed, it is possible to apply TCFs to all living organisms and inanimate materials, providing a brilliant opportunity to understand consciousness as a non-physical entity. According to Taheri, transmitted information via TCFs may lead to alterations in the behavior of treated samples in comparison with controls (without TCFs treatment). To our knowledge, this is the first time that consciousness can be investigated through laboratory tests (Torabi et al., 2020).

The practical application of TCFs has motivated us to investigate their effects on different subjects. Not only do these studies provide a valuable opportunity to understand the notion of consciousness, but they also enable us to evaluate whether information can be transmitted through TCFs. Previously, they have been applied to different subjects ranging from plants (Torabi et al., 2020) and cell line (Taheri et al., 2022a) to materials (Taheri et al., 2021). In this study, two experiments were separately conducted to investigate the effects of TCFs on the *in vitro* maturation of mouse oocytes (IVM), mitochondrial membrane potential, and embryo development through *in vitro* fertilization (IVF). These tests can provide evidence of information transmission via TCFs and evaluate the potential influence of this treatment on embryo development.

Material and Methods

TCFs application

The samples were subjected to TCFs treatment according to protocols regulated by the COSMOintel research center (www.cosmointel.com) and the resources provided by the innovator of the theory (Taheri et al., 2022). In this research, TCFs were applied at the time of the beginning of each experiment to the named plates of immature oocytes (in the IVM experiment) and mature oocyte and sperm system (in the IVF experiment).

Chemicals and animals for IVM experiment

All chemicals were purchased from Sigma (St Louis, MO, USA) except follitropin alfa (Gonal-F), recombinant human follicle stimulating hormone (rhFSH), and human chorionic gonadotropin (hCG) which were purchased from Organon (Oss, Netherlands), and fetal calf serum (FCS) which was purchased from Invitrogen (Carlsbad, CA, USA).

The experiment was performed using 6–8 weeks-old female NMRI mice with an approximate weight of 20-25 grams. They were purchased from Royan Research Institute in Tehran, Iran. The mice were housed under a controlled environment of 22 ± 3 °C temperature and 12 hours of light/dark cycle.

All animal experiments were carried out according to the guidelines of the Iranian Council for Use and Care of Animals and approved by the Animal Research Ethical Committee of Tehran University of Medical Sciences (Ethical Committee code: IR. TUMS. VCR. REC.1399.5341).

In vitro maturation of oocytes

Healthy female mice were sacrificed via cervical dislocation and their ovaries were extracted under sterile conditions. After that, they were freed from all connective tissues and placed in 100 µl of α-minimal essential medium (MEM) supplemented with 5 mg/ml streptomycin, 6 mg/ml penicillin, 5% fetal calf serum (FCS, Invitrogen, USA), 100 mIU/ml recombinant human follicle stimulating hormone (rhFSH), and 7.5 IU/ml human chorionic gonadotropin (hCG, Sigma, USA) under mineral oil. Antral follicles were released from the ovary using an insulin syringe, and granulosa cells surrounding them were removed by pipetting. Immature oocytes (GV) with uniform zona pellucida, translucent cytoplasm and suitable perivitelline space were collected using a stereo microscope (Nikon SMZ- 2T, Japan) and kept in 20-µl drops of culture for 24 hours to IVM.

About 300 separated immature oocytes were divided randomly into five groups. In the first group, immature oocytes were placed in a culture medium containing MEM-α, 75 mIU/ml rFSH, 7.5 IU HCG and FCS 5%. In the second group, immature oocytes were put in the mentioned culture medium with inducing granulosa cells (Positive control). Three types of TCFs, including TCF1, TCF2 and TCF3 were applied to three other experimental groups, respectively according to the TCFs application explanation section. Each experimental group was cultured in a humid incubator at 37 °C with 5% CO_2 (Memmert, Schwabach, Germany). The characterization of the oocytes was evaluated after 24 hours by the use of an inverted microscope (Labamed, USA). The classification of oocytes was as follows: GV when the germinal vesicle (GV) was identifiable, GVBD when the GV was not present, and MII when the first polar body was extruded according to Nikseresht, 2015.

Mitochondrial membrane potential

Mitochondrial membrane potential was measured in this study according to the Cossarizza et al. 1996 study. JC-1 dye can serve as an indicator of mitochondrial potential in diverse cell types. The green to red fluorescence ratio relies solely on the mitochondrial membrane potential and is not affected by factors like mitochondrial size, shape, and density. By employing fluorescence ratio detection, researchers are able to make relative measurements of membrane potential and ascertain the proportion of mitochondria within a group that reacts to a given stimulus (Sivandzade et al., 2019).

To assess mitochondrial membrane potential (MMP) and stain MII oocytes, 1 µL of JC-1 dye (red) was mixed with MEM-α culture medium containing 49 µL of serum and incubated for 30 minutes in 50 µL droplets, with two mature oocytes in each drop, in the dark. The samples were then washed with serum-containing medium while avoiding light exposure. The oocytes were examined using a Nikon fluorescence microscope. Fluorescence intensity was analyzed using ImageJ software. The average MMP of the oocytes was calculated as the ratio of red fluorescence intensity to green fluorescence intensity.

Experimental design for IVF

Animals

In this study, 6–8-week-old NMRI male mice were used as sperm donors (n=5). Also, 6-8 weeks old NMRI mice were used for egg donation (n=28). Mice were kept according to the standard protocol, including 12 hours of light and 12 hours of darkness, and finally, they were killed by cervical dislocation.

Embryo culture medium

This study used a KSOM culture medium containing 0.1 g of BSA was used. (Fraction V; Sigma, Cat. # A9647; lot # 15H0672) according to Erbach *et al* (1994).

Sperm preparation

Fertile male mice were killed and the tail of the epididymis was immediately transferred to a 1500 µl drop of culture medium covered with mineral oil (Sigma: embryo-tested, Cat. #M8410). The contents of the epididymis were removed and the remaining tail tissue was discarded. The petri dish containing sperm was kept in an incubator for one hour at 37 °C with 5% CO_2 in humid air for the capacitation process according to Henkel (2012).

Adult egg collection

Ovulation stimulation of female mice was done by the intraperitoneally (i.p) injection of 7.5 international units of mare serum gonadotropin (PMSG) and 48 hours later, 7.5 i.u. of human chorionic gonadotropin (HCG) were injected according to Helmy *et al*. 2023. In the next step, the eggs were collected 14 hours after HCG injection by removing the oviduct of the female mouse and placing them in the culture medium at 37°C. Cumulus–oocyte complex (COC) retrieved from antral follicles was collected by an insulin needle. Then, the cumulus oocyte masses are pitted until the eggs become single, and finally, we put every 3-5 ovules in drops of 50 µl of the culture medium, which are placed under mineral oil.

In vitro fertilization

IVF was performed as described by Tokuhiro *et al* (2012). It was performed in 50 µl drops of KSOM under mineral oil. A pre-incubated sperm suspension for the capacitation process was slowly added to the collected oocytes to obtain a final motile sperm concentration of 1×10^6/ml. The combined sperm-oocyte suspension was incubated for 4-6 hours. The fertilization rate was evaluated by recording the number of 2-cell embryos 24 hours after *in vitro* fertilization completion.

Statistical analysis

Experiments were repeated at least three times. We didn't exclude any samples from the analysis. For all tests, experimenters were blinded to treatment status. All data are presented as mean ± standard deviation (SD) followed by one-way analysis of variance and multiple comparisons with a 95% confidence interval, and significant p-values less than 0.05. All analyses were carried out with GraphPad Prism version 9.

Results

IVM under the influence of TCFs

The meiotic stages of the oocyte were examined after 24 hours of *in vitro* maturation (Table 1, Figure 1). The average number of immature oocytes reduced by approximately 20% in the positive control, compared to the negative control. Additionally, this reduction occurred by around 33%, 20%, and 36% for TCF1, TCF2, and TCF3, (p-value<0.05) respectively. Moreover, an enhancement in MII oocytes can be observed in TCF1 and TCF3 experimental groups, exhibiting an average increase of approximately 40% (p-value<0.01) compared to the negative control. In the last column of this table, the sum of the MII and GVBD exhibited a noticeable change under the influence of these three types of TCFs (p-value<0.05).

Table 1. The changes in meiotic stages for *in vitro*-cultured mouse oocytes

Experimental Groups*	GV No. %±SD	GVBD No. %±SD	MII No. %±SD	MII+GVBD %±SD
Control (-)	43±9	20±0	37±9	57±9
Control (+)	23±9	17±5	60±8	77±9
TCF1	10±8a	13±5	77±12b	90±8a
TCF2	13±9a	29±9	58±6	87±9a
TCF3	7±9a	16±4	78±6b	93±9a

* Initial oocyte No. in all groups was 60. GV: germinal vesicle, GVBD: germinal vesicle breakdown, MII: metaphase II, TCFs: Taheri Consciousness Fields. All values shown by mean ± standard deviation a: difference with the negative control p-value<0.05, and b: p-value<0.01.

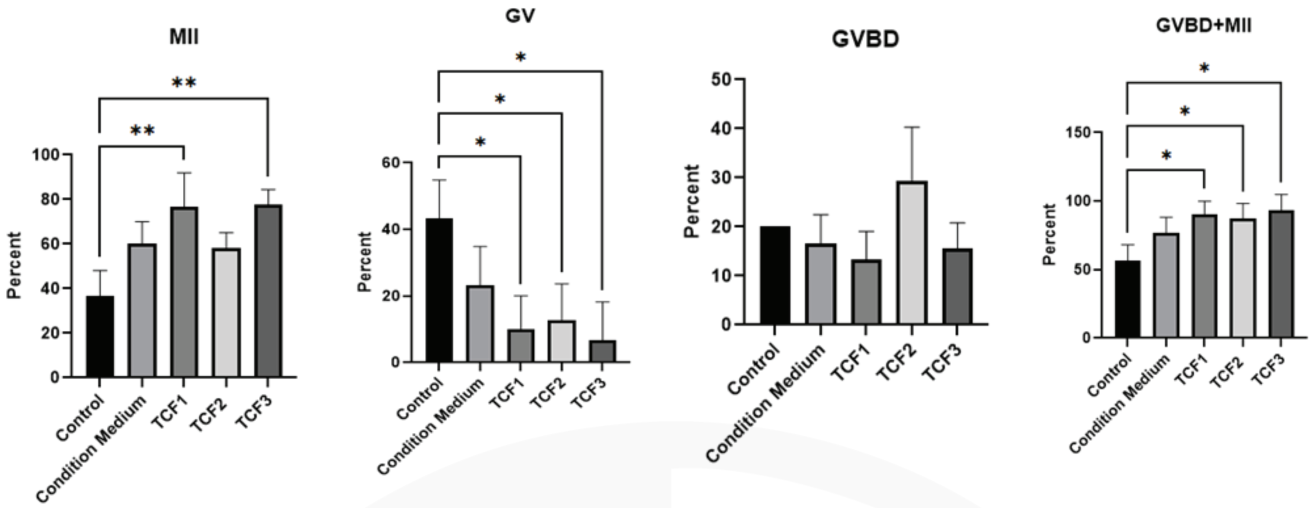

Figure 1. Comparison of oocytes at various stages of meiosis in different sample and control groups, including Germinal Vesicle (GV), Germinal Vesicle Breakdown (GVBD), and Metaphase II (MII). *: p-value<0.05, **: p-value<0.01.

Figure 2 indicates the mitochondrial membrane potential in the experimental groups. The value of the condition medium (positive control) was significantly higher than that of the negative control, by 82% (Fig 2, e). Similarly, in comparison with negative control, a noticeable increase of approximately 61% and 69% can be observed for the samples under TCF1 and TCF3, respectively.

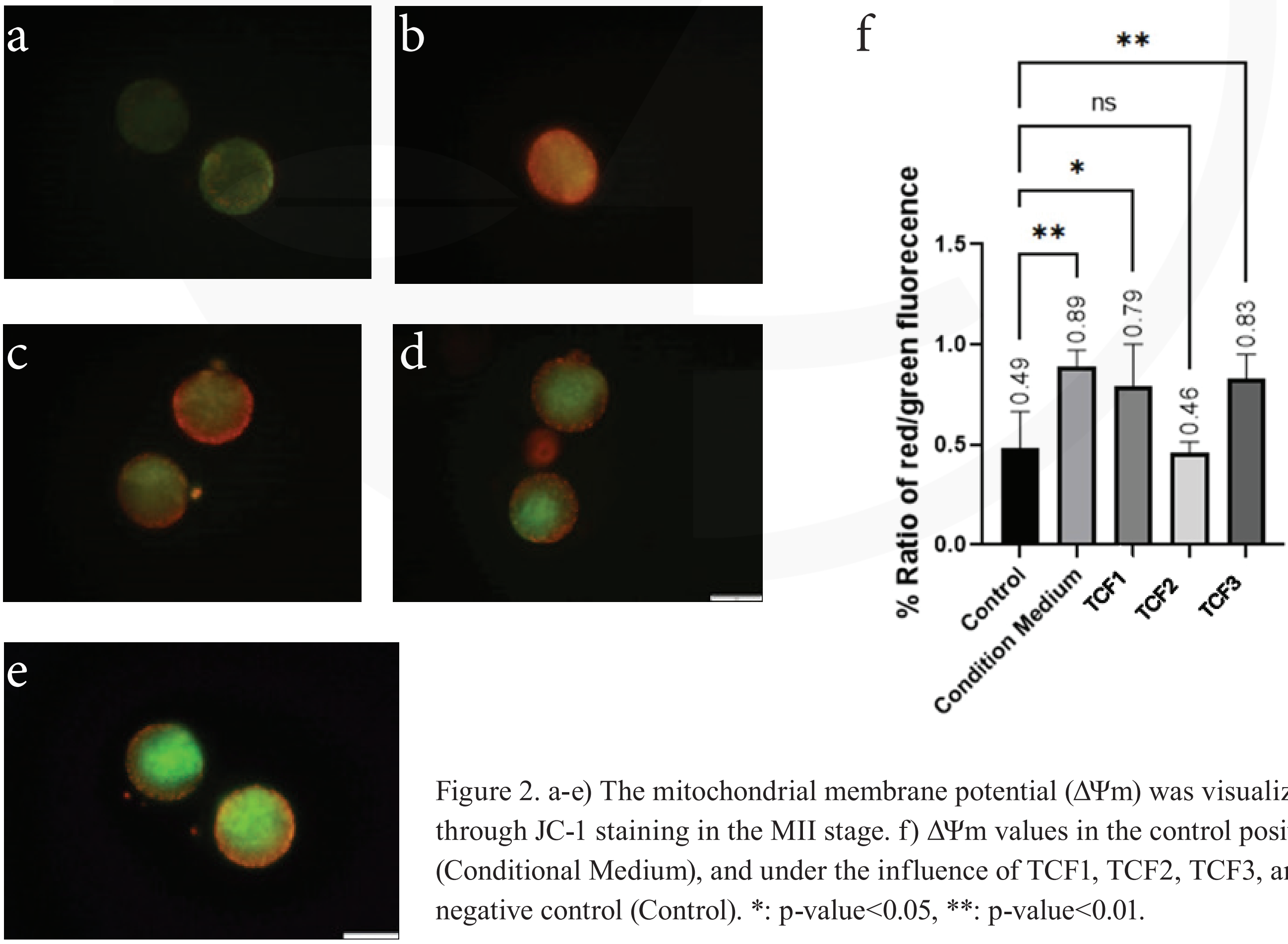

Figure 2. a-e) The mitochondrial membrane potential (ΔΨm) was visualized through JC-1 staining in the MII stage. f) ΔΨm values in the control positive (Conditional Medium), and under the influence of TCF1, TCF2, TCF3, and the negative control (Control). *: p-value<0.05, **: p-value<0.01.

IVF under the influence of TCFs

TCFs increased the percentage of 2PN zygotes by approximately 12% and reduced unfertilized oocytes by 10% compared to the control (Table 2, Fig. 3). However, in other states, the changes were not statistically significant under TCFs treatment. Additionally, Two-cell formation rate was almost similar in both experimental groups (Table 3).

Table 2. *In vitro* fertilization outcomes in TCFs-treated samples and controls.

	Control	Control (%)	Sample	Sample (%)	Delta
2 PN Zygote	120	58.5	145	70.7	12.2
Immature oocyte	5	2.4	7	3.4	1.0
Oocyte	56	27.3	36	17.6	-9.8
Parthenogenesis	12	5.9	11	5.4	-0.5
Degenerated oocyte	11	5.4	5	2.4	-2.9
2-cell	1	0.5	1	0.5	0.0
Total	205		205		

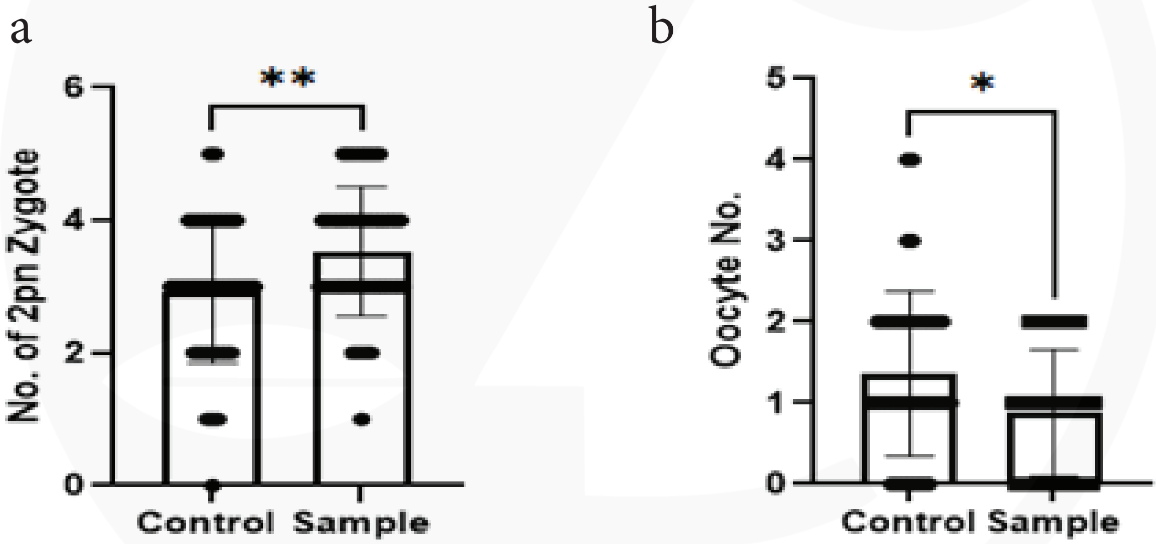

Figure 3. The number of 2PN zygotes (a) and unfertilized oocytes (b) in samples under TCFs treatment and control.
**: p-value=0.0090, *: p-value=0.0172.

The changes of zygotes in experimental groups

After 24 hours, the changes in obtained zygotes presented in the previous section have also been illustrated in Table 3. Although there were no significant differences (p-value=0.07) between TCFs-treated samples compared to the control, an increasing trend in the rate or 2-cell zygotes can be observed under this treatment. Indeed, the distribution of values showed an alteration as a result of exposing TCFs.

Table 3. The rate of two-cell and other states of the zygotes in control and samples under TCFs treatment.

	Control	Control (%)	Sample	Sample (%)	Δ% (S-C)
2 Cell	65	53.7	79	54.1	0.4
2PN	54	44.6	64	43.8	-0.8
Polyspermy	1	0.8	0	0.0	-0.8
Parthenogenesis	1	0.8	1	0.7	-0.1
Degenerated Embryo	0	0.0	2	1.4	1.4
SUM	121		146		

Evaluation of embryo grade

The grades of embryos in the control and TCFs-treated samples have been presented in Table 4. The percentage of A and B grades under TCFs was approximately two times higher than that of the control group (p-value<0.05). Furthermore, there was a reduction of about 45% in the BC grade, as low-quality embryos, under the influence of TCFs (p-value<0.05).

Table 4. The percentage of different grades of embryos in control and samples under TCFs treatment. *: difference with the control group p-value< 0.05.

	Control	Control (%)	TCFs	TCFs (%)	Δ% (TCFs-Control)
A	3	4.6	11*	13.9	9.3
AB	32	49.2	38	48.1	-1.1
B	5	7.7	12*	15.2	7.5
BC	18	27.7	12*	15.2	-12.5
C	7	10.8	6	7.6	-3.2
SUM	65		79		

Discussion

In this study for the first time the effect of TCFs, as a treatment with non-physical entities, on IVM and IVF was investigated. The initial phase of the current experiment demonstrated that TCFs treatment resulted in an improvement in oocyte maturation, characterized by a higher mitochondrial membrane potential. This observation was in line with our previous studies. It has been found that a cell line had a better viability under TCFs treatment (Taheri et al., 2022a). Moreover, the effect of TCFs on ATP production in the HEK-293 cell line was investigated, and the results showed a significant increase in ATP concentration in samples treated with TCFs compared to the control group (Taheri et al., 2022). It is well documented that there is a definite link between oocyte developmental competence and mitochondrial function (Wu et al., 2015). A number of studies have suggested that defects in mitochondrial membrane potential can lead to a reduction in ATP production, oocyte maturation, and embryo development (Al-Zubaidi et al., 2019; Grindler and Moley, 2013).

To further explore the effects of TCF treatment, an IVF experiment was designed as the second part of this study. The obtained data showed that not only did this treatment enhance the probability of 2PN zygotes, but it also increased the embryo quality. Generally, embryos have been graded based on the degree of cellular fragmentation and the regularity of blastomere size. Accordingly, embryo quality is described as grade A, even-sized blastomeres with no/minimal fragmentation; grade B, few uneven-sized cell with minor fragmentation; grade C, uneven-sized cells with moderate fragmentation; grade D, mostly uneven-sized cells with sever fragmentation; grad E, few blastomere of any size with severe fragmentation according to previous literature (Helmy et al., 2023; Li et al., 2015). In the present test, a higher percentage of grade A and B were observed under these non-physical treatments, suggesting an improved quality as a consequence of exposure to TCFs.

As it has been described in the introduction section, Taheri's theory posits that consciousness plays an important role in our frequency universe through which matter and energy originated from it. Historically, the description of consciousness has primarily focused on humans since the 17th century (Seager, 2007, p. 9), and still there is not a universally accepted definition about this most profound of mysteries. Indeed, we cannot accept the existence of consciousness and its influence by solely reading a pile of books; rather, it is necessary to experience it through conducting laboratory experiments. The applicable feature of TCFs allows us to design diverse scientific studies, offering empirical evidence of their influence.

In the realm of physics, the concept of 'Field' has been extensively employed, encompassing familiar laws like gravitational and electromagnetic fields. Now, novel fields have been introduced by Taheri, involving non-physical entities that can have detectable impacts on various subjects. Though it may appear unconventional to investigate the influence of a non-observable phenomena, it is quite common in the history of science. For instance, in cosmology, the most well-known example is dark energy, discovered through observing its effect on universe's expansion (S. Turner and Huterer, 2007). The same can be said for exploring the existence of these fields with non-observable features. Therefore, in the current study regardless of knowing the mechanism of TCFs, and how they may change the behavior of the samples, the first step is recording their influence. This enables us to detect the interaction between consciousness with matter and energy.

According to Taheri, samples exposed to TCFs receive information and consequently exhibit behavior that differs from that of the control (Taheri et al., 2022b). One of the first models of information theory is the communication model introduced by Shannon and Weaver (1949). The communication theory assumes that before receiving some information the system is in a physical state characterized by maximum uncertainty and maximum entropy. Upon receiving the information, entropy decreases (Hoffman et al., 2023; Shannon, 2001). To clarify this concept, the changes in entropy for the TCFs-treated samples and control groups in the current study will be calculated and explained in a subsequent paper.

While the impact of physical fields such as static magnetic field on the mice oocytes has been reported by other researchers (Baniasadi et al., 2023), the peasant results are considered as the first investigation of the effects of TCFs on IVF and IVM studies. Although the exact mechanism of the effect of these novel fields remains unknown, the research finding confirms the positive effects of TCFs treatment. Additional studies are required to further molecular studies about the effectiveness of these novel fields. Moreover, investigating the effects of TCFs on intracytoplasmic sperm injection (ICSI) as well as the *in vivo* development of the mouse embryo beyond the blastocyst stage within the uterine environment is on the agenda of the authors of this study. Collecting additional evidence can assist in elucidating the potential advantages of TCFs treatment.

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Influence of Faradarmani Consciousness Field on Spatial Memory and Passive Avoidance Behavior of Scopolamine Model of Alzheimer Disease in Male Wistar Rats

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Abstract

Alzheimer's disease (AD) is a growing public health concern, affecting millions of patients worldwide and costing billions of dollars annually. There is a pressing need to find effective treatment strategies for AD. In the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material, non-energetic nature, named Taheri Consciousness Fields (TCFs). One of these fields, Faradarmani Consciousness Field (FCF), has been introduced as a complementary medicine, and its effects can be investigated through reproducible laboratory experiments. In this study, we evaluated the influence of FCF on scopolamine-induced memory impairments in male Wistar rats. Rats were divided into four groups (n=10 each). The scopolamine groups received a single injection of scopolamine (SCP) (5 mg/kg) intraperitoneally one hour before the test. Rats in the FCF groups were exposed to this treatment one day before the administration of scopolamine. The passive avoidance and Morris water maze (MWM) tests were conducted to evaluate memory function in the scopolamine-induced rats. The results of passive avoidance and MWM tests revealed that scopolamine induced a decline in spatial memory and cognitive function. Whereas, rats treated by FCF spent more time in target zone and the step through latency was significantly greater than SCP group without FCF. Moreover, rats had lower velocity which may be related to the reduction in stress under FCF. Overall, FCF could significantly ameliorate scopolamine-induced cognitive impairment. Further experiments are required to investigate how exactly this field influence memory at the molecular level.

Keywords: Alzheimer’s disease; Faradarmani; Taheri Consciousness Field; memory; scopolamine; Complementary therapy

Introduction

Alzheimer's disease (AD) is one of the top ten deadly and most expensive diseases, especially in advanced societies. According to WHO, around 55 million people live with dementia worldwide and this number is expected to rise to 78 million in 2030 and 139 million in 2050. AD is a chronic neurodegenerative disease that usually starts slowly and gradually worsens over time. Experimental and clinical studies suggest that the cholinergic system plays an important role in the process of memory and learning (Maurer and Williams, 2017). Studies show that cholinergic degradation leads to changes in the distribution of cholinergic receptors and a decrease in acetyl esterase and acetylcholine transferase levels in the brains of Alzheimer's patients (Contestabile et al., 2008). Some anticholinergic drugs such as scopolamine have shown impairments in animals' memory (Bubser et al., 2012). The application of scopolamine as a non-selective muscarinic receptor can induce cholinergic dysfunction, so it has been frequently used to create animal models of AD (Bartus, 2000; Blokland, 1995; Gallagher and Colombo, 1995).

The Morris water maze (MWM), was first developed in the early 1980s (Morris et al., 1982), and described as a device to investigate spatial learning. It has been widely used in behavioural neuroscience ever since (Bye et al., 2019; D'Hooge and De Deyn, 2001). Inhibitory avoidance test - also called 'passive avoidance'- is another popular paradigm that is commonly used to investigate learning and memory processes in rodents (Gold, 1986; Sadek et al., 2016). In this test, rats receive a single foot shock after stepping from a lighted compartment into a darkened compartment in a straight alley and after 24 or 48 hours. Retention of the training is tested by measuring the rat's latency to enter the former shock compartment when placed in the lighted compartment. Longer latency is an adaptive response to a stressful experience that interprets as a measure of learning and memory (McGaugh et al., 1988).

Extensive studies have examined the efficacy of various chemical drugs and complementary and alternative (CAM) treatment strategies in AD rat models prior to clinical use (Park et al., 2017; Yuede et al., 2007). There is no effective method to delays the onset or slows the progression of AD and its related memory loss (Holtzman et al., 2011; Moss, 2020). It seems that drug therapy can only help to control the temporary symptoms of the disease. At present, the highly viable target for improving Alzheimer's symptoms is cholinesterase inhibitors (ChEIs). Three ChEIs are currently use for mild-moderate AD including donepezil, rivastigmine and galantamine (Long and Holtzman, 2019) which boost the neurotransmitter level at the synapse and thereby increase the cholinergic function. However, these afford palliative relief, and no curative one (Borlongan, 2012).

The nature of consciousness and its place in science have garnered much attention in the current century, leading to the proposal of many philosophical and scientific theories. According to Taheri, there are various T-Consciousness Fields (TCFs) with different functions, which are subcategories of a networked universal internet called the Cosmic Consciousness Network (CCN). One of these fields, the Faradarmani Consciousness Field (FCF) has been introduced as a complementary therapy. The major difference between the theory of TCFs and other theoretical concepts about consciousness lies in the practical application of TCFs. TCFs can be applied to all living and non-living entities, including plants, animals, microorganisms, and materials (Taheri, 2013).

Previously, the effects of TCFs have been investigated on the brain during the connection to the CCN (Taheri et al., 2021; Taheri et al., 2022c; Taheri et al., 2022d). In the present study, the effect of Faradarmani Consciousness Field (FCF) on an AD rat model has been investigated with the general aim of investigating the efficacy of this treatment as a complementary therapy. Regardless of its mechanism(s), we report evidence of the ameliorative effect of FCF on scopolamine-induced memory impairment in the AD rat model.

Materials and Methods

In this study, a total of 80 male Wistar rats obtained from Pasteur Institute of Iran (10 rats in each sample and control group of each test) with a weight range of 240-280 g were used. The weekly age of the rats was 12 to 16 weeks. The light conditions were 12 hours of light and 12 hours of darkness and the rats were kept at a controlled ambient temperature (22±2 °C). All these and following animal experiments were approved by the Laboratory Animal Ethics Committee of Pasteur Institute of Iran and complied with NIH Guide for the Care and Use of Laboratory Animals.

FCF application

FCF was applied to the samples according to the protocols regulated by the COSMOintel research center and based on the description provided in the general considerations of this issue. In this study, FCF treatment is applied through human mind which plays a part by fleeting attention to the subject of study. In other words, this short attention occurred every day for those rats that were kept in the sample (treatment) cages. Moreover, the daily water consumed by rats was under the influence of T-Consciousness Charge, during the whole study time. As it was mentioned above, all the procedures were conducted through the mind with a brief attention to the water or sample cage.

Animal groups

The animals had adequate access to water and food except during behavioural experiments and were divided into the following groups:

1. The control group (PBS): The group that received only PBS (Phosphate Buffer Saline) intraperitoneally one hour before the test.

2. Scopolamine group (SCP): one hour before the test, a dose of 5 mg/kg scopolamine (Sigma Aldrich Company) was injected intraperitoneally.

3. Treatment group (FCF + PBS): The animals were under influence of FCF one day before the test and received PBS intraperitoneally one hour before the test.

4. Treatment group and scopolamine (FCF + SCP): The animals were under influence of the FCF one day before the test and received 5 mg/kg intraperitoneally one hour before the test.

A week later, a recall test was performed for all the aforementioned groups.

MWM test

The Morris water maze includes a black water tank with a diameter of 155 cm and a depth of 70 cm. The maze is physically divided into four quarters of a circle, and a rescue platform is placed in the middle of one of these four quarters so that it is approximately 1.5 cm below the water surface and is not visible from the outside. The water temperature was controlled to remain at 20 to 22$^{\circ C}$. The maze was in a room with various spatial signs that were fixed during the experiments and were visible to the animal in the maze. Swimming activity of the rat was monitored and recorded by a camera that was suspended over the center of the pool.

Training related to MWM

During this stage, the animal was slowly released from one of the four quarters of the water maze into the water and the rat was allowed to find a hidden platform underwater for 60 seconds. After the animal found the platform, the rat was allowed to remain on the platform for 15 seconds to identify its position in the environment. If the rat could not find the platform, it was guided to the platform and after 15 seconds it was removed from the platform and returned with a dry towel to the cage. After 10 minutes, the rat was placed into the water from another four quarters of the water maze. Every rat was released into the water daily from four separate quarters in the water maze tank and this training was repeated for three consecutive days.

Probe test with MWM

This step was performed 24 hours and one week after the last training session. In this way, the platform was removed from the maze and the animal was slowly released into the water from the opposite quarter of the platform position. If the rats had learned well, they would spend most of their time in the target quadrant where the platform was located. Staying time and distance traveled, speed and distance of swimming from the hidden platform position were recorded and analyzed by EthoVision software version 7.

Inhibitory or passive avoidance test

The shuttle box consists of two separate parts (chambers) that are separated by a guillotine valve. The walls and floor of one of these rooms are white (light) and the other is black (dark). The floor of the darkroom has metal rods parallel to the width and with a distance of one centimeter, which can be used to apply an electric shock to the animal's feet with the intensity of 1.5 mA for 1.5 seconds by using a stimulator device. This step was performed for two consecutive days.

Adaptation and Training Session

At this point, each rat was gently placed inside the light chamber and after 10 seconds the guillotine lid was removed and the rat was allowed to enter the dark chamber. The latency time until the rats entered the dark chamber was recorded. The criterion for the animal to enter the dark part was the rat legs entering the dark room. The guillotine door was then closed, and the rat was returned to its box after 20 seconds. After two minutes, the same rat was placed in the light part of the chamber and as soon as the animal entered the dark chamber, the guillotine door closed and the rat was shocked through the metal rods of the dark chamber floor (50 Hz, 1.5 s and 5 mA). After 20 seconds, the rat was removed from the device and transferred to its box. After two minutes, the same rat was placed in a lighted chamber and the guillotine door was opened. The rat was returned to his box but would be shocked if it entered a darkroom within 120 seconds. If the rat received more than three shocks, it was excluded from the experiment.

Retention stage

This step was performed twenty-four hours and one week after training. By placing each rat in the light chamber and opening the guillotine door after 10 seconds, the latency for entering each rat into the dark chamber was determined as a measure of memory and recorded as step-through latency (STL). The total time spent in the darkroom as well as the numbers of round trips between the two rooms in 600 seconds were recorded.

Statistical analysis

The results of this experiment were statistically analyzed using GraphPad Prism software version six. Results of Shuttle Box, MWM training and Probe Water Maze Test were analyzed using "one-way ANOVA", "two-way ANOVA and Bonferroni Post-Test", "one-way ANOVA and Tukey test", respectively. p-values less than 0.05 were considered significant.

Results

MWM test

The results of the Morris water maze test between 4 groups (PBS, scopolamine (SCP), FCF + PBS and FCF + SCP) on training days (three consecutive days) showed no significant difference between groups in a delay time in finding a platform (Escape latency). It should be noted that none of the groups were treated during the training phase.

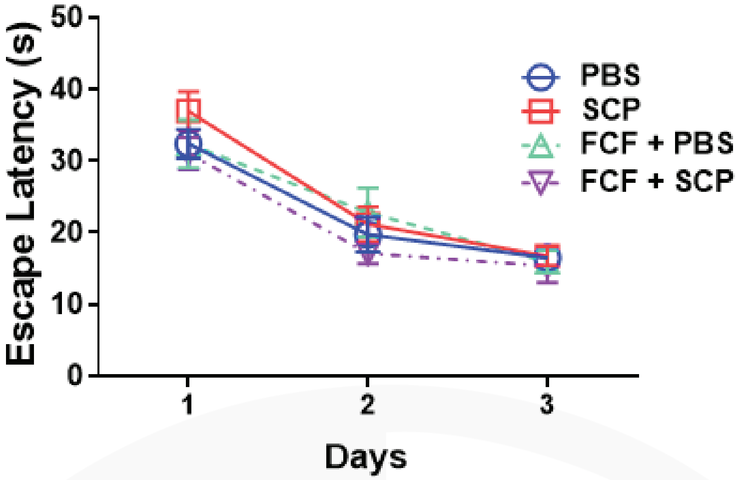

Figure 1. Morris water maze test to find the platform on training days (FCF: Faradarmani Consciousness Field treatment. SCP: Scopolamine. PBS: Phosphate Buffer Saline).

24 hours after the last training session, a memory test or probe was performed. One hour before the probe test, the control and FCF + PBS groups were treated with PBS and other groups were treated with scopolamine. The effects of scopolamine and PBS on animal performance at the probe stage are shown in Figure 2.

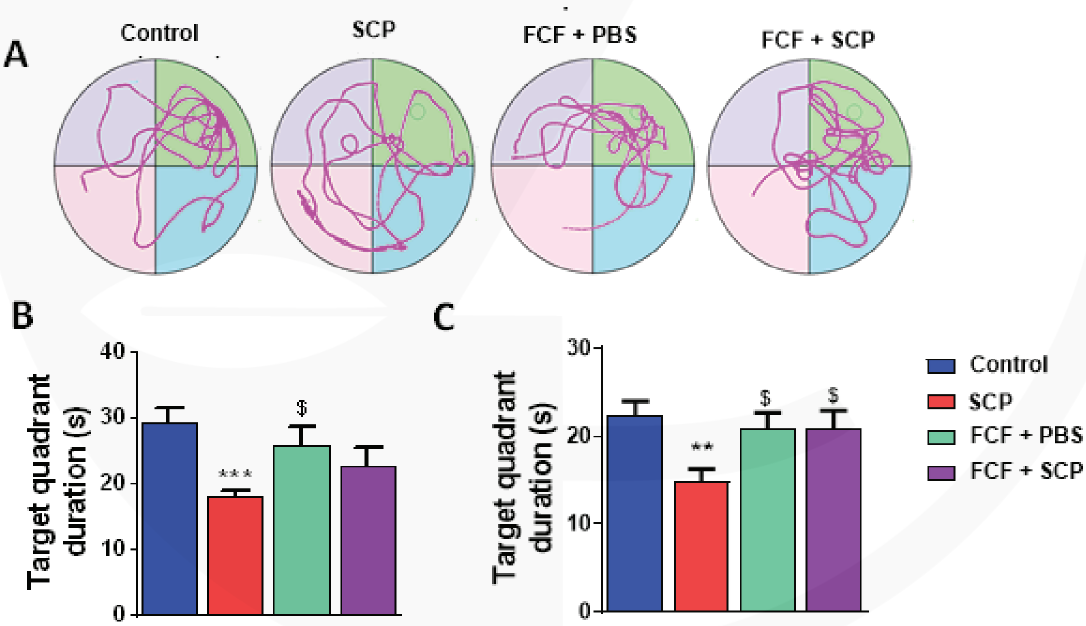

Figure 2. Scopolamine impaired spatial memory. A) Representative swimming trace of rats in the Morris tank during the second probe test (one week after the last training session). B) 24 hours after the last training session. C) One week after training, the recall test (Probe 2). (** and ***: differences with control group $p < 0.01$ and $p < 0.001$, respectively. $: Difference with scopolamine group $p < 0.05$. FCF: Faradarmani Consciousness Field treatment. SCP: Scopolamine. PBS: Phosphate Buffer Saline). All values are presented as means ± standard error (mean ± S.E).

Swimming trace of rats in Morris tank showed various pattern in each group (Fig, 2A). Also, spatial memory in SCP group remarkably impaired in both probes 1 ($p < 0.001$) and 2 ($p < 0.01$) in comparison with the control. In the second probe test scopolamine-induced memory deficit was significantly reversed under the influence of FCF ($p < 0.05$) (Fig, 2C).

Figure 3 indicates the speed of movement of animals in experimental groups. The FCF + SCP group has lower velocity in probes 1 and 2 than the SCP group. In probe 2, the velocity of the FCF + SCP group was significantly lower than the control group ($p < 0.05$).

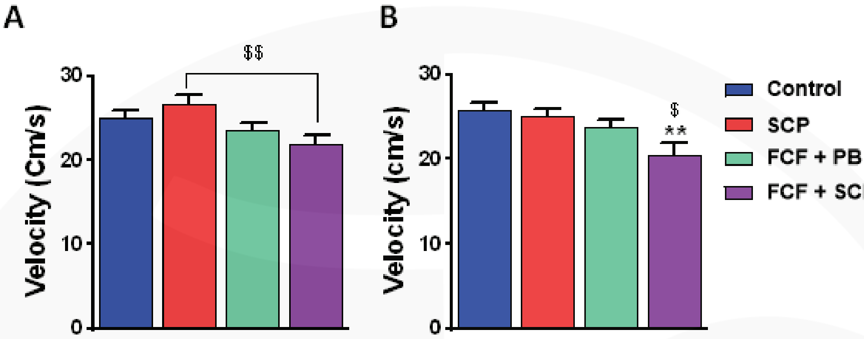

Figure 3. Speed of animals in probes 1 and 2. FCF reduced the speed of movement of animals in the scopolamine-treated group (**: Difference with control group $p < 0.01$. \$ and \$\$: Difference with scopolamine group $p < 0.05$ and $p < 0.01$, respectively. FCF: Faradarmani Consciousness Field treatment. SCP: Scopolamine. PBS: Phosphate Buffer Saline). All values are presented as means ± standard error (mean ± S.E).

Passive avoidance learning and memory test results

Figure 4 shows that no significant difference was observed in the initial latency to enter the dark chamber (A). Note that at this stage, the experimental groups have not yet received any treatment. Animals treated with scopolamine showed impaired avoidance memory 24 hours after training (Fig, 4B). There was no significant difference between FCF treatment (FCF + PBS) and the control group (PBS). However, the application of FCF in scopolamine-treated groups (FCF + SCP) prevented memory impairment and restored the ability to recall in this group. Interestingly, the time delay in entering the dark chamber one week after the training increased to a great extent as compared to the SCP group (Fig, 4C).

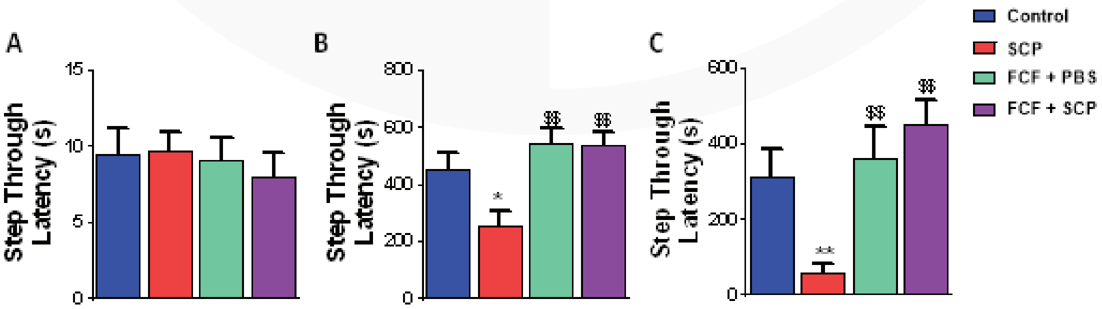

Figure 4. Passive avoidance memory test. A) Delay time in entering the darkroom on the first encounter with the device. B) The delay time in entering the dark compartment 24 hours after the training. C) The time delay in entering the dark chamber one week after the training (* and **: differences with control group $p < 0.05$ and $p < 0.01$, respectively. \$\$: Difference with scopolamine group $p < 0.01$. FCF: Faradarmani Consciousness Field treatment. SCP: Scopolamine. PBS: Phosphate Buffer Saline). All values are presented as means ± standard error (mean ± S.E).

As Figure 5A presents, scopolamine significantly increased the time spent in the dark compartment (where the shock was received 24 hours ago). No significant difference was observed between the control and FCF + PBS group. Whereas, in SCP group under FCF treatment the time spent in the dark chamber notably reduced when compared with the SCP without FCF. Figure 5B presents the time spent in the darkroom one week after receiving the shock. The scopolamine-treated group spent more time in the darkroom than the control group and FCF treatment reduced this time significantly.

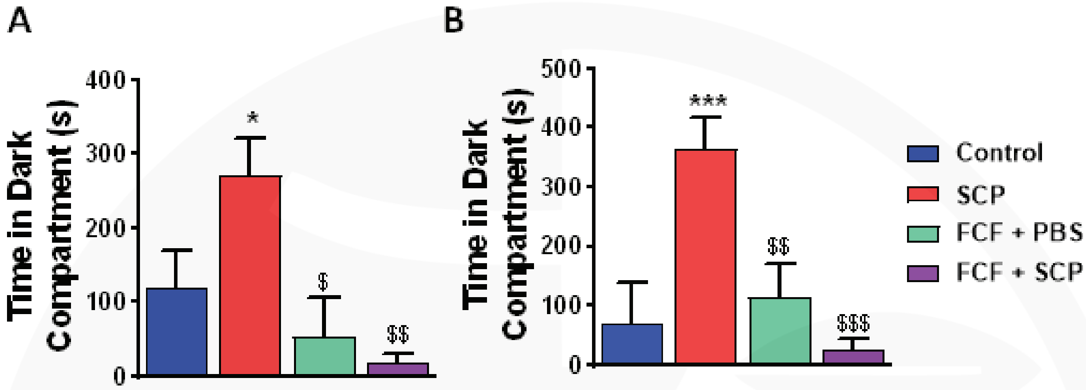

Figure 5. Time spent in the dark chamber. A) Avoidance memory test 24 hours after receiving electric shock. B) Avoidance memory test one week after receiving the electric shock. (* and ***: differences with control group $p < 0.05$ and $p < 0.001$, respectively. $, $$ and $$$: Difference with scopolamine group $p < 0.05$, $p < 0.01$ and $p < 0.001$, respectively. FCF: Faradarmani Consciousness Field treatment. SCP: Scopolamine. PBS: Phosphate Buffer Saline). All values are presented as means ± standard error (mean ± S.E).

Discussion

In this experiment, using scopolamine-induced memory impairment in male Wistar rat, we investigated whether Faradarmani as a non-material/non-energetic field could alleviate cognitive dysfunction in rats. One of the main characteristics of AD is the basal and hippocampus degeneration of cholinergic neurons specifically in the nucleus basalis of Meynert (Al-Shaikh et al., 2020). Scopolamine is frequently used *in vivo* models for mimicking those observed in AD (San Tang, 2019). The use of animal models to evaluate the effectiveness of various drugs and treatments for AD, with all the limitations of these models, is an inevitable and invaluable experimental need (Neff, 2019). Passive and active behavioural avoidance and spatial memory tests have been utilizing to evaluate the effectiveness of different neuroprotective agents against AD (Komaki et al., 2019; Schimidt et al., 2017; Scuderi et al., 2014).

Conventional treatments such as donepezil or galantamine lead to an increase in acetylcholine levels and cognitive improvement in individuals with AD (Bezerra da Silva et al., 2016; Li et al., 2019). However, these drugs are supportive rather than curative, and they cannot increase the lifespan of AD patients. Meanwhile, cholinesterase inhibitors may worsen cognition at early stage and may not improve the cognitive course in mild AD dementia (Han et al., 2019). Therefore, identification of the therapeutic substitutes for the treatment of AD is of crucial importance.

The field concept is used frequently in physical theories and there have been many attempts to explore and explain physical laws, such as gravity, electromagnetic and electric field. When it comes to therapeutic effects, the relationship between AD and electromagnetic field has been investigated (Dasdag et al., 2020). According to a number of experiments, this field may increase the risk of AD (Jalilian et al., 2018; Sobel and Davanipour, 1996) by inducing an enhancement in Amyloid-beta, which is known as a common marker of AD in the brain (Davanipour and Sobel, 2009). Conversely, it has been reported that extremely low frequency electromagnetic fields can improve cognitive disorder signs of AD rat model (Akbarnejad et al., 2018). About forty years ago Mohammad Ali Taheri introduced novel fields (TCFs) (Taheri, 2013) that are completely different from all known physical fields (Taheri et al., 2021). As explained in the introduction, FCF has been introduced with a therapeutic effect, and it is possible to examine its effects through reproducible experiments.

According to the obtained results from MWM, FCF had an alleviative effect on SCP-treated rats. The reduction in the speed of swimming in FCF treated rats may suggest an overall reduction in the rat stress. According to a study stressed-out rats have higher movement speed and show longer path in MWM (Gehring et al., 2015). The results of this study align with previous research showing that FCF treatment reduces tau protein concentration in AD neuronal cells under aging stress, stabilizes microtubules, and decreases amyloidopathy. It was reported that FCF prominently suppressed neurodegeneration in cultured neurons, leading to the elimination of tau protein accumulation (Taheri et al., 2021).

TCFs are neither matter nor energy and their influence initiate with a brief attention to the samples through the human mind. Therefore, the main limitation of this study is that there is no possibility to measure FCF, as a non-physical field, directly with scientific tools. However, it is possible to investigate their effects indirectly through designing various experiments.

As a matter of fact there are many different kinds of complementary therapies based on mind-body interaction such as meditation (Danucalov et al., 2013) and mindfulness (Russell-Williams et al., 2018). It is impossible to measure their level of stimulation quantitatively, but their effects can be evaluated by applying them to treatment groups and comparing the observed outcomes with control groups. Other experiments worth mentioning include mind-matter interactions in random number generators, which similarly investigate the effects of the mind on data transfer (Radin and Patterson, 2007). Although FCF and meditation both affect the body through the mind, there are significant differences between them. In meditation, the individual's mind plays an active role, whereas in FCF treatment, the mind acts as an intermediary to transmit information from the Cosmic Consciousness Network (CCN) to the subject under study. This approach allows the examination of FCF's influence on various subjects, ranging from plants and animals to molecules and materials. To our knowledge, however, there is no animal testing in meditation and other mind-body therapies.

The practical application of TCFs allows researchers to design various experiments within their fields, aiming to explore the existence of T-consciousness as a third element of the universe, distinct from matter and energy. It means that the effects of TCFs can be investigated on different subjects even if they are not alive. For example, it was found that FCF alleviated adverse effects of salinity stress on wheat plant (Torabi et al., 2021), death and survival of cancer cell line changed under FCF treatment (Taheri, 2022). Moreover, the properties of the materials changed significantly after being exposed to the TCFs (Taheri et al., 2022a, 2022b; Taheri et al., 2021).

In conclusion, this experiment provides evidence of the effects of FCF on an AD rat model. The observed results in this study warrant further research to elucidate the mechanism(s) of FCF and its protective effect against cognitive disorders.

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Effects of Faradarmani Consciousness Field on Hippocampal Structure/Function and Pancreatic Beta Cells in STZ-Induced Diabetic Rats

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Abstract

Diabetes mellitus (DM) is a growing health issue that harms brain structure and function, particularly in the hippocampus, which is crucial for learning and memory and is affected by disrupted glucose homeostasis. There are limited non-invasive treatments specifically targeting CNS impairments associated with diabetes. T-Consciousness Fields (TCFs) with non-physical entities have been introduced by Taheri. The influence of these fields can be investigated on various subjects, including living organisms and inanimate materials. The purpose of this study is to investigate the effect of a type of TCFs named the Faradarmani Consciousness Field on hippocampus structure and function in diabetic rats. The male Wistar rats (n=48, 150 ± 10 g weight, 8 weeks age) were categorized into four groups (n=12) including control (C), Faradarmani Consciousness Field (T), Diabetic control (D), Faradaemani Consciousness Field+diabetic (DT). Faradarmani was applied over eight weeks to both Diabetic (DT) and T groups. Peritoneal injection of STZ solution (50 mg/kg) was used to induce diabetes. Cognitive functions were assessed using the Morris water maze. At the end of the experiment, rats were sacrificed, and their brains were processed for cresyl violet staining to quantify surviving neurons in the hippocampus. H&E staining showed significant disorganization and cell loss in brain regions of the diabetic group. According to cresyl staining, in diabetic groups, Faradarmani treatment significantly reduced the death of cells in the CA3 and DG areas of hippocampus. Additionally, the rate of beta cell destruction and cellular apoptosis, as graded, decreased in the DT group but not significantly. Data from the Morris water maze revealed that diabetic groups exhibited notably impaired cognitive performance relative to the non-diabetic group. The T group spent significantly more time in the target zone across all days, while the DT group outperformed the D group on the second day. Although the distance traveled was significantly higher in the Faradarmani groups, the time spent in target zone for the T and DT groups suggests a possible improvement in memory retention. In conclusion, this experiment provides evidence of the effects of Faradarmani on structure and function of hippocampus in a rat model

Keywords: Taheri Consciousness Fields, Faradarmani, Cognitive function, Diabetes mellitus, Cosmic Consciousness Network.

Introduction

Diabetes mellitus is considered a serious metabolic problem in the world. Different types of diabetes are characterized by hyperglycemia, insulin resistance, and relative insulin deficiency (American Diabetes Association, 2010). Studies have shown that lifestyle changes including weight loss, increased mobility, and lower consumption of glucose and high-calorie sources can prevent the disease and its progression (Baghianimoghadam et al., 2011).

Based on the results of recent studies, high levels of glucose are regarded as the main reason for damage to the nervous system (Marissal-Arvy & Moisan, 2022). The hippocampal formation is a part of the limbic system which is a key brain area for many forms of learning and memory and is particularly sensitive to changes in glucose homeostasis. Its neurons are extremely vulnerable to diabetes (Marissal-Arvy & Moisan, 2022). Lower hippocampal and brain volumes are likely to happen in diabetes (Ho et al., 2013).

Beta cell destruction is a pivotal factor in impaired insulin production in both Type 1 Diabetes (T1D) and advanced stages of Type 2 Diabetes (T2D). In T1D, an autoimmune response targets and erroneously destroys beta cells, resulting in a significant loss of insulin production. This compromises the regulation of blood glucose levels, necessitating exogenous insulin administration. In T2D, chronic exposure to elevated blood glucose and metabolic factors leads to gradual beta cell dysfunction and destruction. The diminished responsiveness of beta cells to glucose, coupled with insulin resistance in peripheral tissues, contributes to inadequate insulin secretion, exacerbating hyperglycemia over time (Kroon et al., 2008).

Various studies have shown that diabetes is mainly associated with degenerative and functional disorders of the central nervous system, and there is ample evidence that the pathway that begins through the neurodegenerative effects of diabetes is oxidative stress. Reactive oxygen species (ROS), which are composed of oxygen free radicals and other chemical compounds, can promote oxidative stress in the body (Montilla et al., 2005) and eventually cause neuronal death, leading to diabetes-related neuropathology, which has a direct impact on the memory and learning of diabetics (Kashihara et al., 2010).

Several methods have been proposed for the treatment and control of diabetes, including traditional medicine, different types of exercise, drug treatments, stem cells, Complementary and alternative medicine (CAM), etc. Due to the side effects of drug treatments and the reduction in their effectiveness over time, researchers are motivated to explore new methods and discover improved ways to manage diabetes and its complications (Burcelin et al., 1999). So far, the effect of more than 1,200 herbs in reducing blood sugar or reducing its side effects is known. Over the past 10-20 years, numerous laboratory and clinical studies have been performed on medicinal plants used in the treatment of diabetes, some of which have significant effects on lowering blood sugar in diabetic patients (Marles & Farnsworth, 1995).

The examination of consciousness and its position within the scientific discourse has attracted considerable scholarly attention in the contemporary era (Taheri, Modarresi-Asem, et al., 2022; Taheri, Payervand, et al., 2022). The aim of this study is to investigate the potential of Faradarmani Consciousness Field in alleviating diabetes-related consequences in the hippocampus and pancreas.

Material and Methods

Animals

To this aim, 48 male Wistar rats (150 ± 10 gr, 8 weeks age) were selected from Pastoor Institute in Iran. The rats were categorized into four groups including control (C), Faradarmani Consciousness Field (T) Diabetic control (D), and Faradarmani Consciousness Field +diabetic (DT). The study begins with one-week acclimatization to allow the rats to become familiar with their new surroundings which were environmentally controlled (55 ± 5 humidity, 20 ± 5 °C temperature), 12-12 H light-dark cycle (lights on 6:00–18:00 hours).

Induction of Type 2 Diabetes

For obesity, diabetic rats were exposed to a high-fat diet for the first 4 weeks including 22% fat, 48% carbohydrates, and 20% protein from the Razi Institute of Dermatology in Iran (Zhang et al., 2008). Type 2 diabetes mellitus was induced by dissolving STZ (50 mg/kg, i.p.; Sigma) in a citrate buffer (pH 4.5) and injected in each rat. Then, the blood samples from the tail were obtained 24 hours after the injection. The blood glucose meter (Beurer GL42, Germany) measured the glucose levels to determine whether the rats were diabetic (>250 mg/d) (Islam, 2013).

Faradarmani Consciousness Field application protocol

Faradarmani was applied to two groups and to ensure that the control groups are not affected by Faradarmani, we separated Fardarmani groups into separate room in the lab. The treatment duration was 8 weeks, with the treated groups receiving Faradarmani for 10 minutes every day, six days a week. Those samples without Faradarmani treatments are considered as controls.

Cognitive tests

These tests were performed four weeks after induction of diabetes to allow time for the development of the diabetic-associated behavioral changes and then repeated at the end of the study after 8 weeks to assess the effect of the different treatment protocols.

The Morris water maze test

Morris water maze is a circular pool (150 cm diameter, 60 cm height) which was divided into four quadrants including North East (NE), North West (NW), South East (SE), and South West (SW), and was filled with water (20±1 °C, 55±5% humidity), escape platform, and camera which was suspended above the maze and recorded escape latency, distance to reach the platform, and the percentage of time which rat spent in target. Then, the surface of the escape platform was covered in a fixed position of 1 cm under the water. The MWM was in the laboratory surrounded by various signs and colors (circle, triangle, and square), which was considered a training protocol identified as a very good and relevant test for evaluating the effect of exercise on learning and memory. Each rat was given eight trials per day for three consecutive days. The interval between trials was three minutes. Each release point was randomly changed for every trial. To be accustomed to the maze, the mice were placed in water without a platform for three minutes to swim three hours before training. Then, each rat was placed slowly from the tail zone and faced the wall of the pool to avoid stress at different starting points, and then was allowed to swim to find the hidden platform. Each trial lasted until the rat discovered the hidden platform or for a maximum duration of 60 seconds. Further, it was allowed to rest on it for 30 seconds. Each rat that failed to find the platform within the allocated time was picked up and placed on the platform by the experimenter. After the last trial, the rats were dried with a towel and returned to the home cage. To assess memory retention, a spatial probe test was performed one day after the last acquisition trial, and the platform was removed from the maze. Each rat spent 60 seconds searching for the water maze.

Long-term memory

After three days' rest, a hidden platform was placed in the SW quadrant, and each rat performed one trial similar to the acquisition sessions to evaluate long-term memory. The spatial learning and memory of rats were tested according to the method of R. Morris. A Morris water maze with a submerged platform and a video tracking system (ANY-maze™ Video Tracking System; version 4.72-Stoelting Co.) were used.

The Morris water maze consisted of a circular tank, (diameter: 120 cm, height: 30 cm) filled to a depth of 24 cm. The water temperature was 26$^{\circ C}$ and a 10 cm clear circular platform was submerged 1 cm below the water level in the northwest quadrant of the maze.

Cue discrimination. a visible platform test was performed to exclude drug or experimental manipulation-induced changes in visual acuity. The video tracker system was not used and only a stopwatch was used in this test. Habituation to the pool was done by permitting the rats to swim freely for 30 seconds and giving them four trials (from four different directions) to climb to the platform that had been extended 1 cm above the water level. The rats then had 15 trials of cue training in 3 block intervals, each including five trials; the intervals (intertrial and interlock) were approximately 10 minutes. During this stage, we didn't provide the rats with cues except for the platform.

During spatial discrimination, the hidden platform was placed 1.5 cm below the water level changing the area of the pool from that used during cue discrimination training. We added powdered milk to make the pool water opaque, rendering the platform 'invisible'. The platform location had been fixed relative to the distal cues. Rats had trained in eighteen trials in the form of six blocks (three trials per block) and the intertrial intervals were about 10 minutes, after every trial, we stirred the water to avoid the effect of odor trails as unwanted cues. Rats were allowed to start swimming in each trial from one of four locations (north, south, east, and west); the choice of the location was random for each rat and each trial. The rat should escape to the platform within 60 seconds and if that didn't occur, we guided them gently toward the hidden platform where they remained for 10 seconds. The rats were dried with a towel and returned to their cage after every trial. The parameters recorded in these training blocks were: latency to reach the platform, distance travelled in the maze till reaching the platform and proximity (% of time spent within the quadrant where the platform was placed).

Probe trial

In the probe trial (the immediate probe trial) we removed the platform from the swimming pool and allowed the rat to swim for 60 seconds. The probe trial was given after the fifth training block and the rats then had the sixth block of training that was not included in the cognitive assessment. To assess 24-hour retention, rats were given another probe trial 24 hours later (the platform was removed from the pool) (Vorhees & Williams, 2006).

Tissue preparation and sectioning

Tissues were placed in 10% formaldehyde for two hours, then were removed and placed in a new formaldehyde solution for 24 hours before being dehydrated using ethanol (70% for 24 h, 90% for 1 h and 100% for 1 h) and then cleaned in xylene and embedded in paraffin. Coronal sections were cut with a microtome (Leica RM 2025, Germany) at 5 µm thicknesses, mounted on glass slides and underwent different staining methods (Theory and Practice of Histological Techniques, 6th Edition | Journal of Neuropathology & Experimental Neurology | Oxford Academic, n.d.).

Histological staining

Hematoxylin and eosin (H&E) staining

The left hippocampus and pancreas were fixed with 10% neutral paraformaldehyde, dehydrated through ascending concentrations of ethyl alcohol, cleared in xylene, embedded in paraffin, and then cut manually using a microtome to obtain 5 mm thick sections. The sections were deparaffinized and rehydrated through descending concentrations of ethyl alcohol and stained with hematoxylin and eosin (H&E). The stained tissues were dehydrated in 80% alcohol followed by 95% ethyl alcohol, placed in two changes of 100% ethyl alcohol, and cleansed with two changes of xylene. Histopathological examinations were carried out by using a phase contrast microscope with an attached camera (Nikon H600L, Tokyo, Japan).

The pancreas was harvested from the sacrificed rats after dissection and was weighed and washed with saline. The specimens were stretched on filter paper and fixed in 10% buffered formalin (pH 7.4). The fixed specimens were sliced, processed, and embedded into paraffin blocks. The blocks were cut into 4 µm paraffin sections by a rotator microtome. The sections were stained with Hematoxylin and Eosin (H&E) and with Masson trichrome stains

Fuchsin staining for pancreas beta cells

The pancreas was dissected out carefully and fixed in 10% formal saline for 48 hours and thereafter processed for paraffin blocks. Sections of 5-micron thickness were taken and stained with Haematoxylin and Eosin as well as Gomori's Modified Aldehyde Fuchsin stain and observed under a light microscope (Greenwell et al., 1983).

Nissl staining for hippocampus neurons

Nissl staining was used to assess neuronal damage in the hippocampus (Nobakht et al., 2011). Brain sections were immersed in xylene solution for 15 minutes and then slides were immersed in ascending grades of alcohol in the following order, absolute alcohol - 1 minute, 90 % alcohol - 2 minutes, 70 % alcohol - 2 minutes, 50 % alcohol - 2 minutes. After processing through alcohol, slides were immersed in distilled water for 10 minutes and were stained for 25–30 minutes at a temperature of 60° in 0.1 % cresyl violet stain and then allowed to cool at room temperature. Stained sections were again immersed in distilled water for 5 minutes and in ascending grades of alcohols (70 %, 90 %) for 2 minutes. Finally, sections were dipped in xylene for clearing and mounted with DPX. The brain sections were incubated with a 5% toluidine blue solution at room temperature for 15 min. Following rinses with tap water, the sections were dehydrated and mounted.

Statistical analysis

The results were analyzed using SPSS. Data were presented as mean ± SD. Comparison of quantitative variables between the studied groups was done using the analysis of variance One-Way (ANOVA) test with the Bonferroni post hoc test or Kruskal Wallis test with Wilcoxon signed rank test depending on the result of the Shapiro-Wilk test for normality of distribution which determined if data was parametric or non-parametric. Results were considered statistically significant at $P \leq 0.05$.

Results

Spatial learning and memory

The Morris Water Maze (MWM) test was performed after six weeks in four groups. The results showed that the T group spent the most time in the target zone across all test days compared to the other groups. The difference in time spent in the target area was significantly increased in the T group compared to the C group. Meanwhile, the DT group spent a similar amount of time in the target zone as the D group on the test day. In the final test, the T group spent the most time in the target quadrant overall. Spending more time in the target zone during the MWM test typically indicates better spatial learning and memory performance in rodents. However, in the long-term memory test, the DT group did not show significant differences in time spent in the target zone compared to the other groups, suggesting no changes in long-term memory.

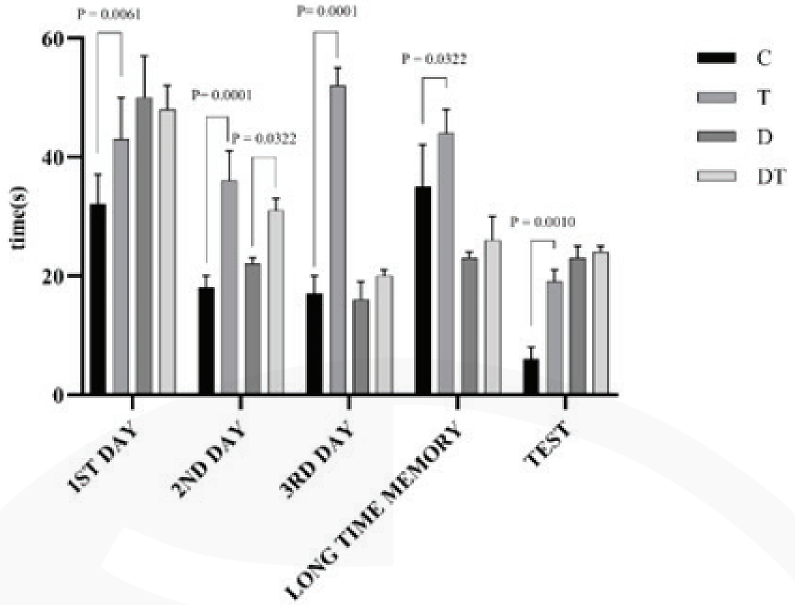

Figure 1. MWM test (time) in experimental groups, including control (C), Faradarmani Consciousness Field (T) Diabetic control (D), and Faradarmani Consciousness Field+diabetic (DT). As presented in Figure 1, the T group showed significantly higher time spent in the target zone on all days compared to the control group ($P \leq 0.05$). On the second day, the DT group also demonstrated a significant difference in time spent compared to the D group ($P = 0.0322$).

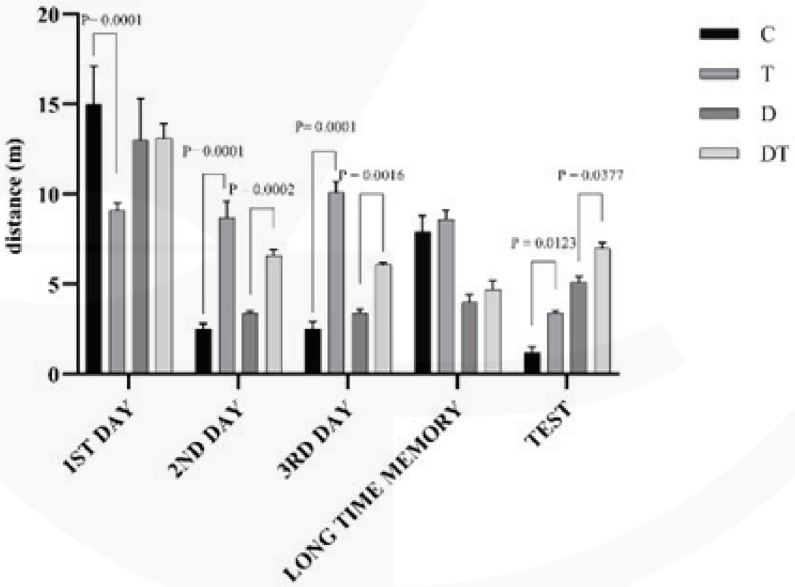

Figure 2: MWM test (distance) in experimental groups, including control (C), Faradarmani Consciousness Field (T) Diabetic control (D), and Faradarmani Consciousness Field+diabetic (DT). As presented in Figure 2, both healthy and diabetic Faradarmani group rats showed longer distance in the target range compared to the respective control groups ($P<0.05$). The difference in travel distance among the groups was not significant in the long-term memory test.

Pancreas tissue H&E staining

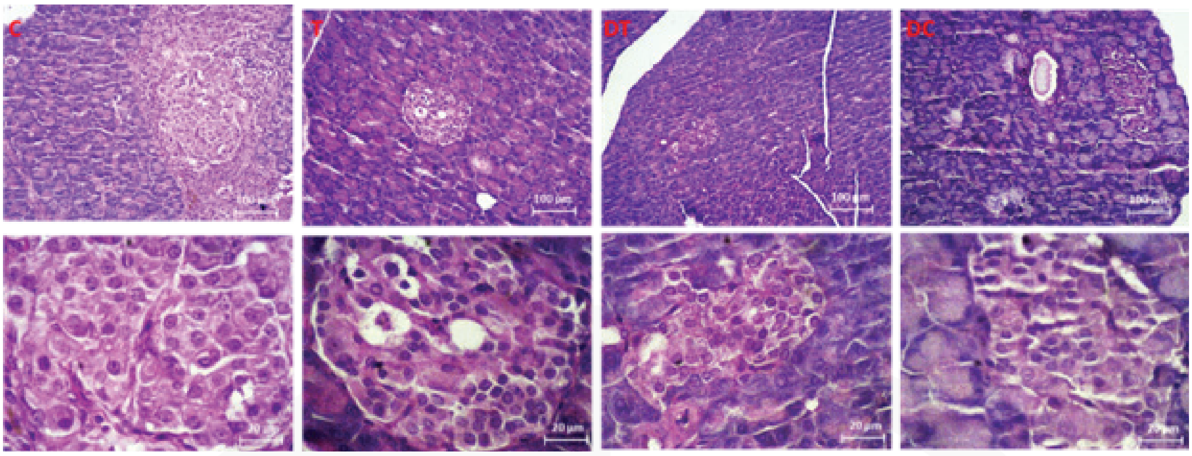

Figure 3. H&E staining of pancreas tissue in control (C), Faradarmani (T), diabetic + Faradarmani (DT), and diabetic control (D).

Images in groups C and T show the nucleus of beta cells in bold blue, while alpha cells are pink and scattered, mostly on the margins of islands and between beta cells (magnification x400). Based on the observed results, the rate of beta cell destruction and cellular apoptosis based on grading in control and T groups are 1% and 5%, respectively (Figure 5).

Images from the D and DT groups show a decrease in cell density. Degraded cells with nuclear contraction and pyknosis are more commonly seen in the center of the islands. Alpha cells with a pale pink nucleus are located on the islands and beta cells with an euchromatin nucleus are in the center of the island (magnification x400). According to the results observed in these groups, the rate of beta cell destruction and cellular apoptosis based on grading in the DT group was 50%, and in the D group, it was 70%, but the difference was not significant.

Fuchsin staining of pancreatic beta cells

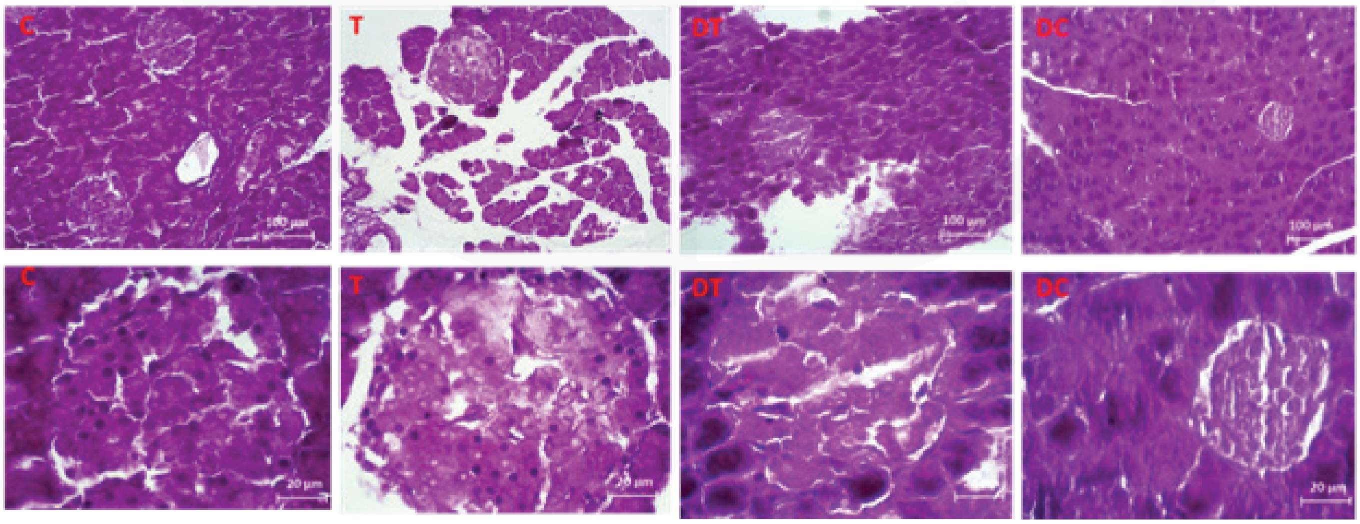

Figure 4. Fuchsin staining of pancreas tissue in control (C), Faradarmani (T), diabetic + Faradarmani (DT), and diabetic control (D)

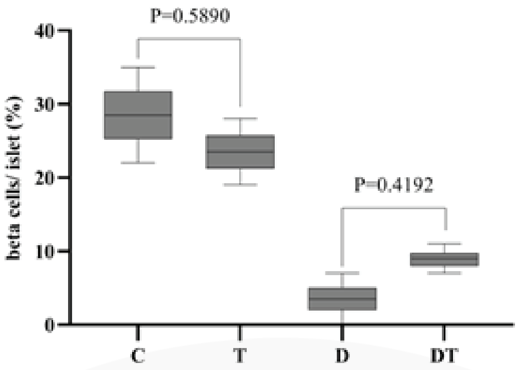

Figure 5. The number of beta cells per each islet in control (C), Faradarmani (T), diabetic + Faradarmani (DT), and diabetic control (D).

Based on the beta cell count in each area, the extent of pancreatic damage was estimated. Notably, the Faradarmani diabetic group exhibited a higher number of remaining healthy cells compared to the control diabetic group, although the difference was not statistically significant (P = 0.419). This suggests that the Faradarmani treatment may contribute to lower levels of destruction, potentially due to the effects of this field.

Hippocampus tissue H&E staining

Quantification of hippocampal damage across research groups revealed that the diabetic control group exhibited significantly higher proportions of cell death, exceeding 40% (P<0.05). The healthy control and Faradarmani control groups exhibited the lowest levels of damage (less than 20%) across all three areas of the hippocampus, with no significant difference between these groups. In the CA3 and DG regions of the hippocampus, the percentage of dead cells exhibited a significant decrease in the Faradarmani diabetic group compared to the diabetic control group, indicating the effectiveness of Faradarmani treatment in reducing cell death (DT: 25% and D: 45%) (P < 0.05) (Figures 6-14).

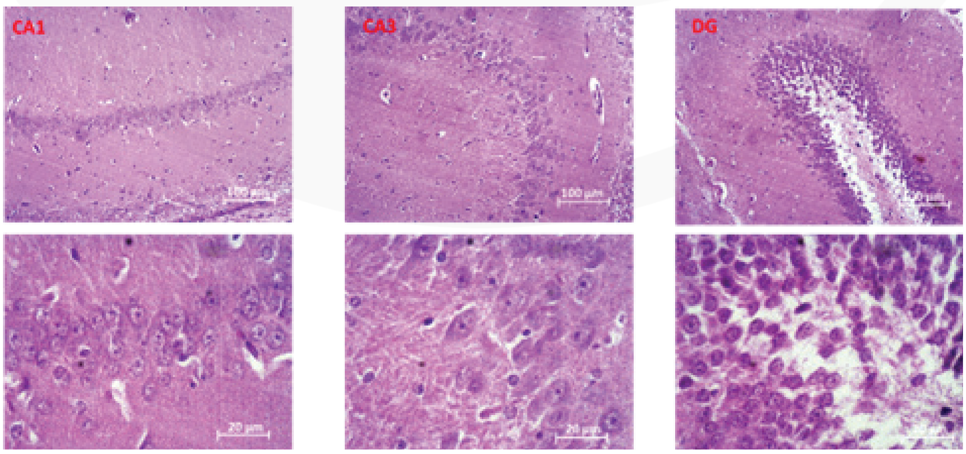

Figure 6. H&E staining of hippocampal tissue in three regions of CA1, CA3, and DG hippocampus of control group (C).

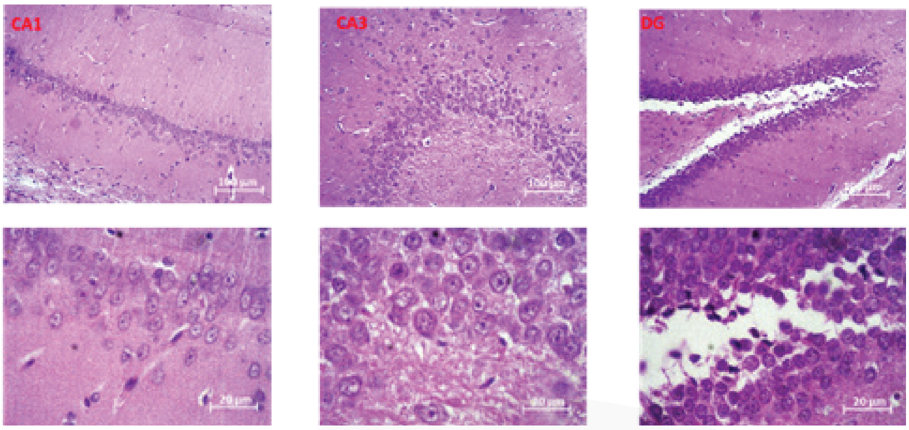

Figure 7. H&E staining of hippocampal tissue in three regions of CA1, CA3, and DG hippocampus of the Faradarmani group (T).

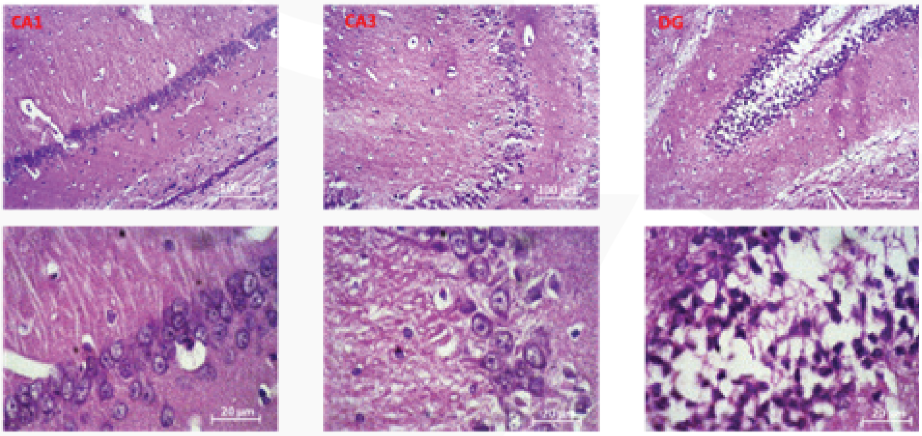

Figure 8. H&E staining of hippocampal tissue in the CA1, CA3, and DG regions of the hippocampus of the diabetic control group (D).

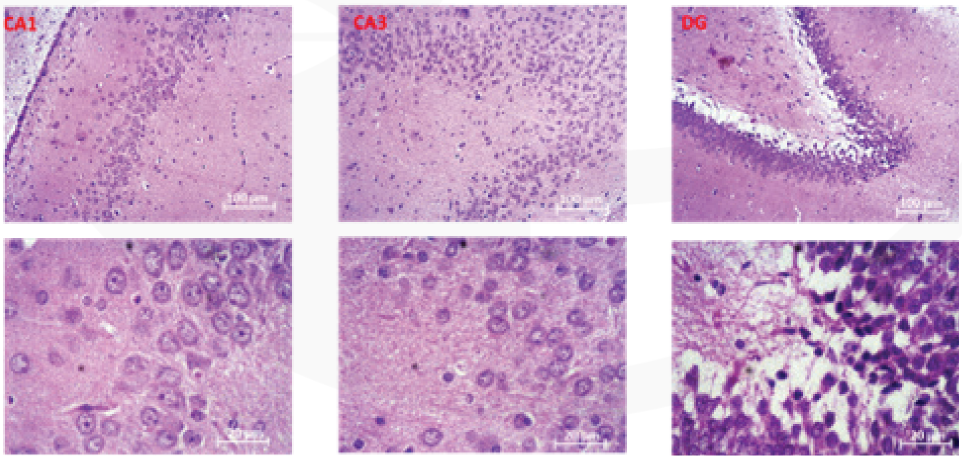

Figure 9. H&E staining of hippocampal tissue in the CA1, CA3, and DG regions of the hippocampus of the diabetic (DT) group

Hippocampus tissue Nissl staining

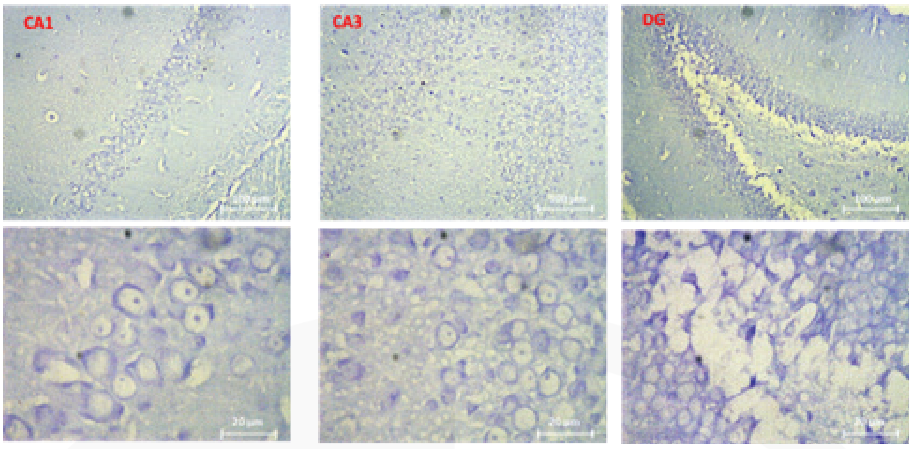

Figure 10. Nissel staining of hippocampal tissue in three regions of CA1, CA3, and DG hippocampus of control group (C).

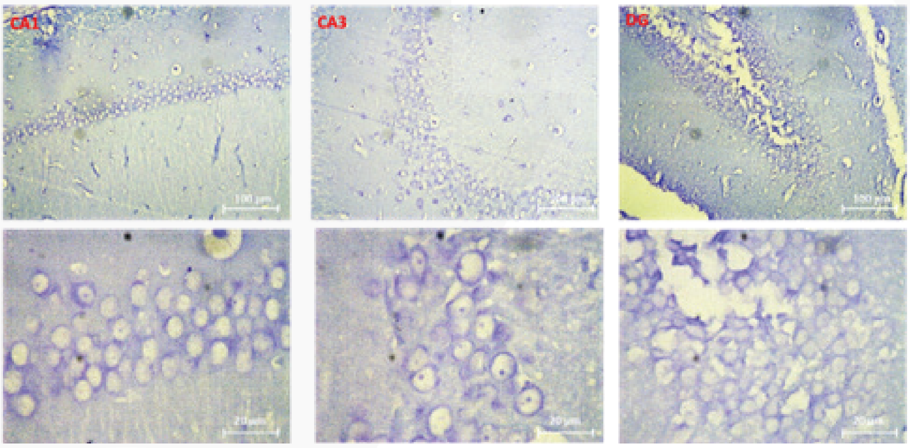

Figure 11. Nissel staining of hippocampal tissue in three regions of CA1, CA3, and DG hippocampus of Faradarmani group (T).

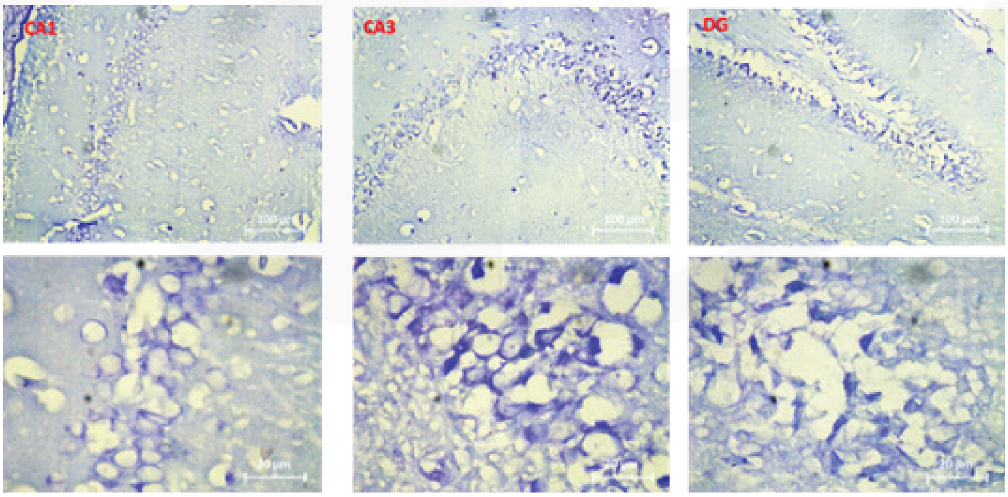

Figure 12. Nissel staining of hippocampal tissue in three regions of CA1, CA3, and DG hippocampus of the diabetic control group (D).

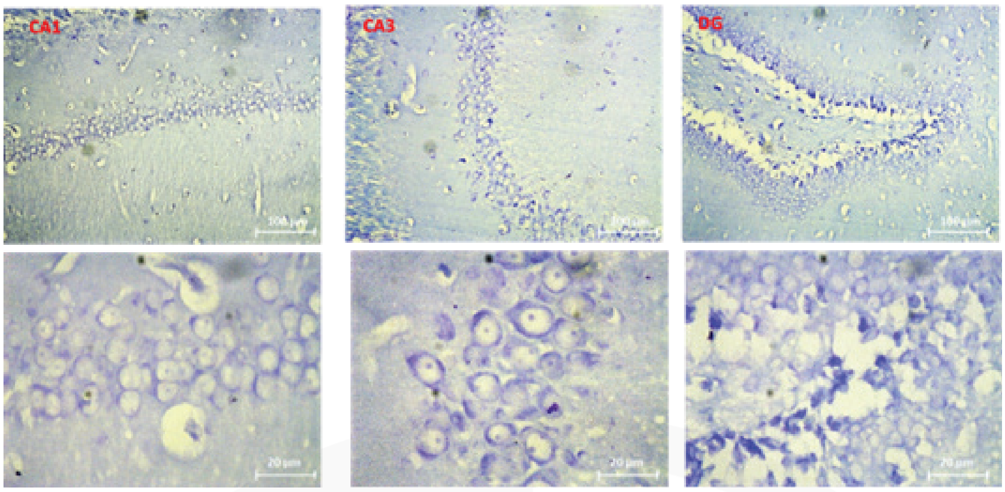

Figure 13. Nissel staining of hippocampal tissue in three regions of CA1, CA3, and DG of the hippocampus of the diabetic (DT) group.

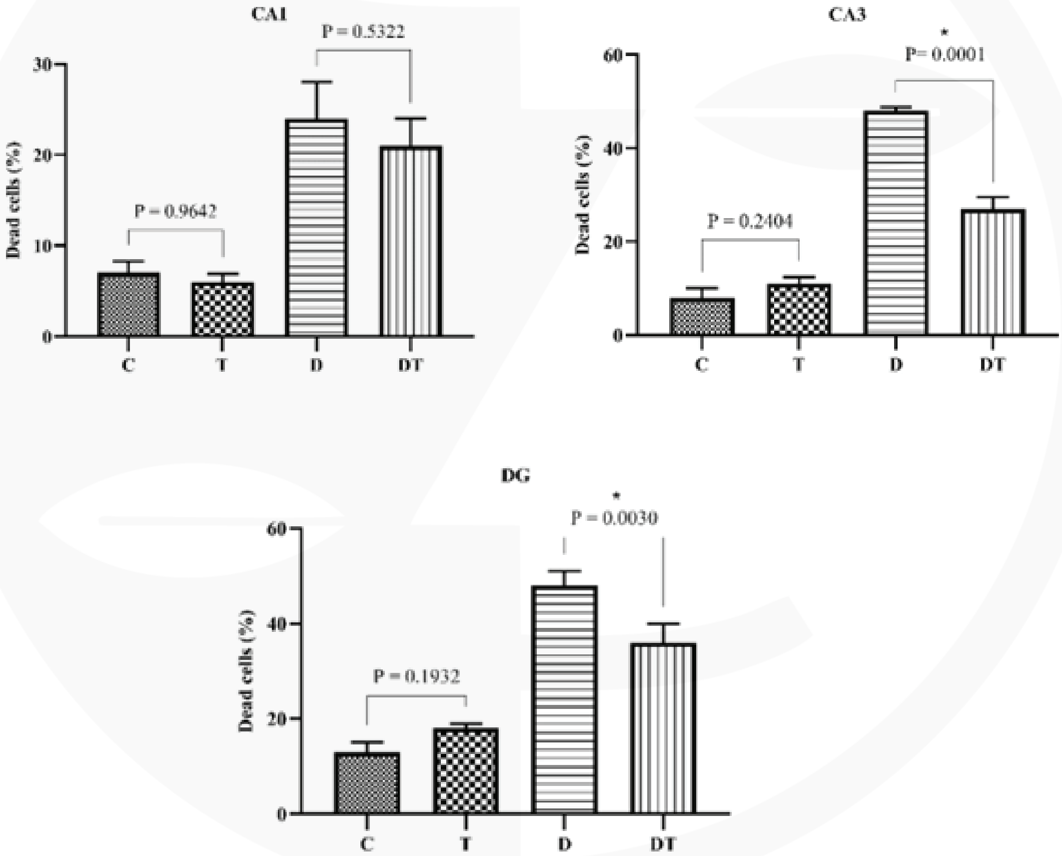

Figure 14. Percentage of dead cells in hippocampal tissue of CA1, CA3, and DG regions in control (C), Faradarmani (T), control diabetic (D), and diabetic Faradarmani (DT) groups.

The Figure 14 shows hippocampal damage between the diabetic control group (45%) and the diabetic Faradarmani group (25%), with a significant difference observed. There is a significant difference in the CA3 (P=0.001) and DG (P=0.030) areas, but not in CA1 (P=0.53). The difference between the control and treatment group (<20%) is not significant in the three areas of the brain (P>0.05).

Discussion

To investigate the effects of Faradarmani Consciousness Field on the modulation of diabetes consequences in the hippocampus, we considered three main assessments to discover cognitive, pancreatic and hippocampal changes among four experimental groups. At the structural level, when examining changes in cytoplasmic unspecified proteins with the H&E method, we observed insignificant changes in pancreatic beta cells and significant changes in hippocampal nerve cells in the diabetic group exposed to Faradarmani. β-cell regeneration can occur through two main mechanisms. The first involves stimulating the division of existing β-cells, but it is crucial to induce this proliferation in a cell-specific manner to prevent oncogenic transformation. The second mechanism involves cellular reprogramming, which can arise from stem-cell-like populations (directed differentiation) or from other terminally differentiated cell types (transdifferentiating) (Vetere et al., 2014).

Additionally, the number of hippocampal neuronal dead cells in the DG, CA3, and CA1 regions changed in diabetic rats exposed to Faradarmani. The results showed a significant decrease in dead cells in the DG and CA3 regions of the diabetic group compared to the control group. The healthy control and Faradarmani groups showed similar levels of dead cells (Figures 6-14). Treatment with Faradarmani caused improvement in the form of preservation of small pyramidal cells and markedly decreased apoptosis of large cells. However, the results showed that the treatment group did not exhibit significant changes in short and long-term memory compared to the control groups. After six weeks, the T group showed superior initial performance in the Morris Water Maze, spending more time in the target zone. In the final test, the T group also demonstrated prolonged time in the target zone, indicating enhanced spatial learning and memory but not significantly (Figure 1). However, the significant increase in the distance traveled by the T and DT groups, which is a marker of slow pace or inefficiency, was observed across all days (Figure 2).

The results of the spatial memory were in consistency with Taheri et al.'s (2021) studies in rat models of Alzheimer's disease. They found that treatment with scopolamine disrupted long-term memory, while treatment with Faradarmani CF improved memory function, similar to untreated controls. Both normal rats and AD models showed improved training and memory, enabling them to return to the maze platform. Additionally, rats treated with Faradarmani exhibited a decrease in swimming speed, indicating reduced overall stress levels (Taheri et al., 2021). A relevant review emphasizes that antidiabetic regimens can have beneficial effects on cognitive decline and memory impairment associated with diabetes. Treated groups may retain more information, potentially allowing them to navigate more effectively, even if they travel more slowly (Xourgia et al., 2019). This concept aligns with the idea that slower, more deliberate movement may facilitate better memory encoding and retrieval; however, this specific conclusion requires further empirical support from relevant studies. The observation of reduced travel speeds and extended durations among the Faradarmani groups may suggest enhanced memory encoding processes. However, additional research is required to validate this hypothesis.

The results of various studies have shown that diabetes causes structural and functional changes in the central and peripheral nervous system, including slowing down the conduction of nerve messages, disruption in the process of regeneration of peripheral nerves in the body and deformation of nerve fibers (Jackson-Guilford et al., 2000). It has also been shown that diabetes is one of the causes of memory impairment, which is one of the symptoms of Alzheimer's disease (Biessels et al., 2006).

The improvements in neural function observed in the DG and CA3 regions following treatment in diabetes could be attributed to several potential mechanisms (Figure 14). One possible factor is the reduction of oxidative stress, as oxidative damage to neurons is known to contribute to cognitive impairment in diabetes (Kuhad et al., 2008). Additionally, the anti-inflammatory effects of the treatment may play a role, as chronic inflammation is a hallmark of diabetes-related cognitive decline (Lee & Jun, 2016). Furthermore, the treatment might enhance neurotrophic support, as neurotrophic factors are crucial for neuronal survival and function, particularly in the hippocampus (Eyileten et al., 2017). These mechanisms, either independently or in combination, could contribute to the observed improvements in neural function in the DG and CA3 regions in diabetic individuals following treatment. However, Further experiments are required to explore how Faradarmani may directly or indirectly influence these mechanisms, as suggested by our results.

The damage observed included hippocampal regions or beta cells destruction and necrosis, which is consistent with previous studies (Eizirik et al., 2020; Mohajeri et al., n.d.; Wang et al., 2021). The effects of TCFs on molecular and cellular reprogramming in different living subjects have been proven in different studies (Taheri et al., 2020; Taheri, Modarresi-Asem, et al., 2022; Taheri, Payervand, et al., 2022). These results are consistent with the study conducted by Taheri *et al.* (2020) to investigate the effects of Faradarmani on breast cancer cells. They showed the rate of cell death and apoptosis molecular markers decreased after TCFs treatment (Taheri et al., 2020).

According to the theory of TCFs, the mechanism of Faradarmani application can facilitate the reprogramming and regeneration process of impaired cells by establishing a connection between the subjects under study and the Cosmic Consciousness Network (CCN). Through this connection, required data and information are transmitted from the CCN to the impaired organs or cells of the subjects. As a result, structural or functional improvements can be observed, in accordance with the general rules of the ecosystem.

In conclusion, this study provides evidence suggesting that Faradarmani, as a type of TCFs introduced by Taheri, may have beneficial effects on hippocampal and pancreatic health in diabetic individuals. The observed improvements in neural function in the DG and CA3 regions, along with the regeneration of pancreatic beta cells, indicate the potential therapeutic benefits of Faradarmani. These effects may be mediated through mechanisms such as cellular reprogramming and neurotrophic support. However, further research, including long-term studies and clinical trials, is warranted to fully elucidate the mechanisms and long-term effects of Faradarmani in diabetes management. Overall, these findings contribute to our understanding of TCFs treatment and their potential role in improving health outcomes in diabetic individuals.

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Effect of T-Consciousness Fields on Skin Allograft Survival in Rats

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** Ms. Laleh Amani was a dedicated, compassionate, and energetic researcher in the field of CosmoIntel research who has passed away. While expressing our gratitude and appreciation for her extensive efforts in this field, we pray for her peace.

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Abstract

Skin grafting is widely used in the repair of skin surgeries. Since a critical issue related to an allograft is its rejection, it is necessary to find a method that can prevent allograft rejection and increase allograft survival without side effects. According to Taheri, there are various T-Consciousness Fields (TCFs) with different functions. These fields are neither matter nor energy but it is possible to investigate their effects on objects with different controlled experiments. This study aimed to investigate the effects of two types of TCFs (1 and 2) on skin allografts in rats. Twenty rats were randomly divided into two groups the control and the group receiving tacrolimus. Then, the group receiving tacrolimus after surgery was divided into two groups, one group was affected by the TCFs (1 and 2) and another group was not affected by it. After two weeks, histologic and macroscopic observations were performed on all groups. The results showed that transplant in TCFs treated rats was successful and the new epidermis was formed, and sebaceous glands and high number of capillaries could be detected in the dermis layer. It seems that TCFs as a qualitative treatment can be an option to reduce the probability of graft rejection. Further research is needed to clarify the alleviative effects of TCFs on graft survival.

Keywords: Taheri Consciousness fields, Skin allograft, T-Consciousness

Introduction

In 1954, the first successful human organ transplantation occurred. Joseph Murray transplanted a kidney between two twins (Murray et al., 2001). Skin grafting is one of the most essential methods in dermatology and plastic surgery. In 1869, Reverdin performed the first skin grafting with his skin (Reverdin 1872), since then many pioneers have attempted to improve graft outcomes (Lawson 1968, Ollier 1968).

Skin grafting is used in various clinical conditions such as traumatic wounds, post-oncological resection defects, burn reconstruction, the release of scar contraction, vitiligo, urology, and restoration of hair (Valencia et al., 2000, Patino et al., 2019, Mutalik et al., 2000, Shimizu et al., 2012).

When a patient has lost more skin so that it's difficult to replace it with autoplastic-free grafting, the surgeon may use pinch grafting or skin from a relative of the patient or voluntary (Gibson et al., 1943). Skin replacements are generally classified into three types autografts (cells or skin taken from another site of the body in the same person), allografts (cells or skin taken from another individual), and xenografts (cells or skin taken from one species to a different species)(Jones et al., 2007).

Allogenic skin has had a significant role in acute burns for over 100 years (Burd et al., 2005). Skin allografts induce a severe inflammatory immune response (Benichou et al., 2011). Several factors may cause the failure of skin grafts like hematoma, infection, mechanical shearing forces, insufficient recipient bed vascularity, technical error, etc. (Dockery et al., 2012). Transplantation tolerance has been defined as a non-responsiveness to antigens (Billingham et al., 1953). Similarly, the patients who maintained stable allograft function for at least one year were considered tolerant (Feng et al., 2012). Therefore, it seems very necessary to find and use a method that can prevent allograft rejection and increase their survival without the side effects.

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 the 1980s, Mohammad Ali Taheri introduced novel fields with a non-material/non-energetic nature named Taheri Consciousness Fields (TCFs). 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. (Taheri 2013). This study aimed to investigate the effects of two types of TCFs (1 and 2) on skin allografts with histopathological analysis in rats.

Methods Application of TCFs

TCFs were applied to the samples according to the protocols regulated by COSMOintel research center (www.cosmointel.com) and the general consideration of this issue.

Grouping and keeping laboratory animals

Twenty rats were utilized in this study. In the first step, rats were divided into two groups, including the control and the group receiving tacrolimus (dose 2 mg/kg) as an immunosuppressive drug. Also, the group receiving tacrolimus after skin allografting surgery was divided into two groups including the TCFs treatment group and the non-treatment group. After two weeks, skin samples from the transplanted section were taken from laboratory animals for histopathological analysis.

Establishment of skin allografting model and experimental design

Animals were anesthetized through an intramuscular injection with a combination of xylazine and ketamine and were placed in a prone position on a standard surgical platform with the dorsum exposed. The hairs on the back of the rats were shaved using a razor blade and prepped with povidone-iodine solution. A full-thickness dorsal skin (2 cm diameter circle) was harvested from the donor rat, and then the skin allograft was transplanted on the back of the recipient (Figure 1). After two weeks of storage, tissue samples were taken.

Figure 1. Procedures for skin allografting surgery

Histopathological analysis

Histopathological examination of the region of the graft was performed through the slides stained with hematoxylin and eosin. The samples were immobilized in a hydrochloric acid solution of formaldehyde. Then, they were decalcified in a solution of 17% EDTA, and for dehydration, they were utilized from graded alcohol series. Finally, paraffin was used to fixation of them. A series of cross-sections with a diameter of 5 μm were prepared. Then, they were stained with hematoxylin and eosin (H&E) and were investigated under light microscopy. All experimentations were done based on the related rules and guidelines.

Results

Macroscopic examination

The macroscopic evaluation of allografted rats affected by TCFs displayed that these rats showed better adhesion of the graft and hair formation on the transplanted skin and around them (Figure 2).

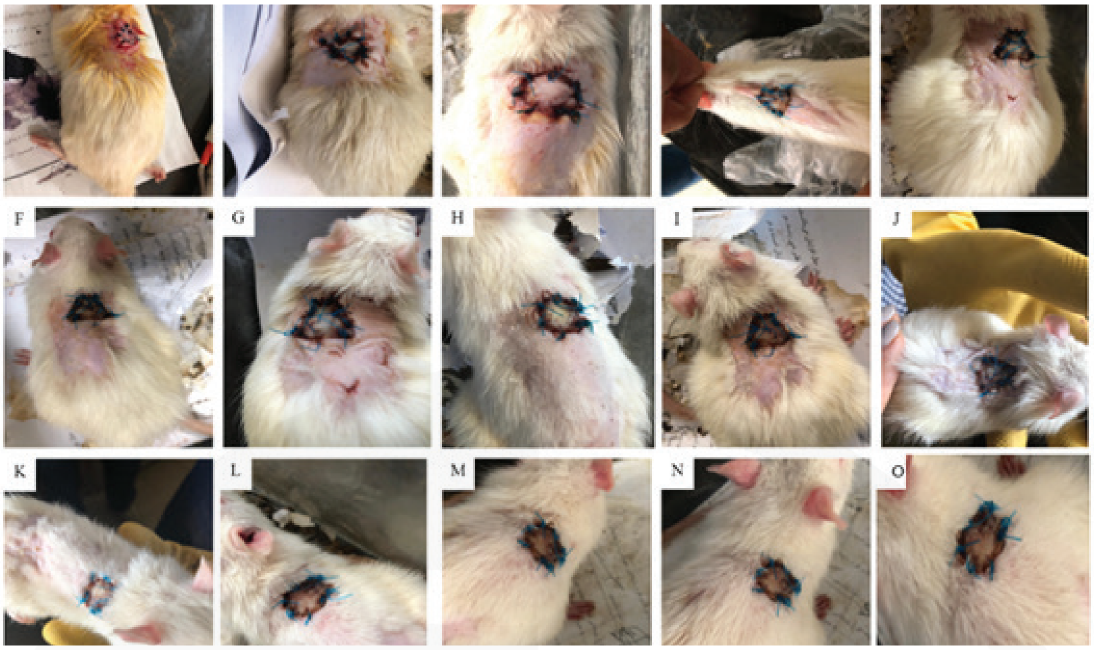

Figure 2. A to O Panels show the two-week trend after surgery in the T-Consciousness Fields treatment group.

The macroscopic observation of the non-treatment group showed the graft area was not fully attached to the skin of the mouse, the skin graft was being rejected and no hair had grown on the grafted area (Figure 3).

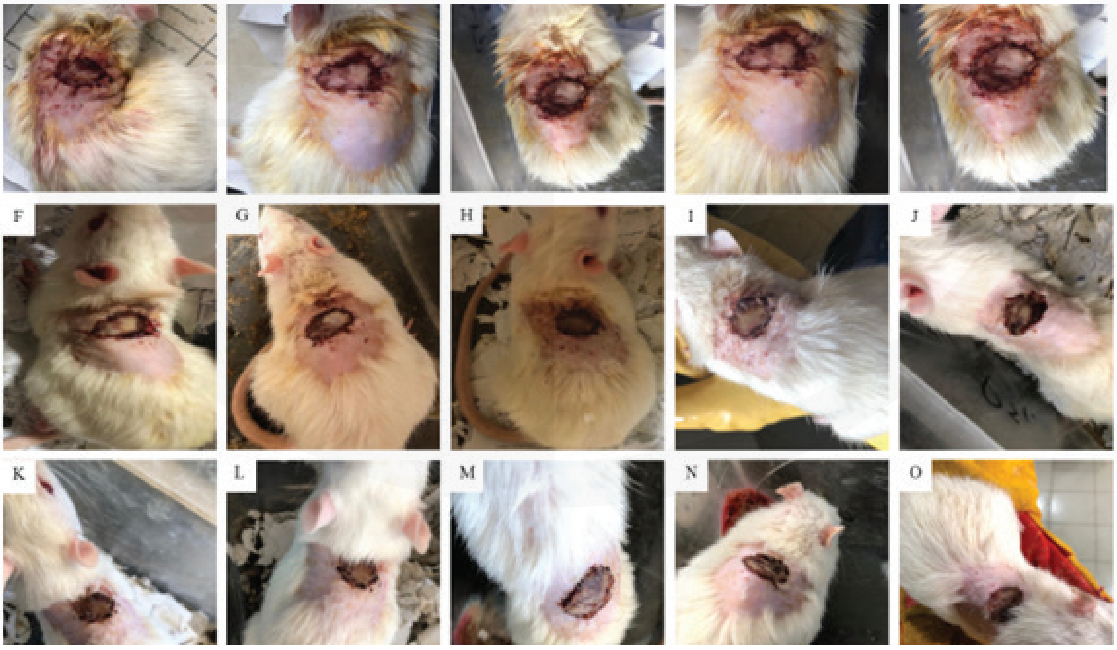

Figure 3. A to O Panels show the two-week trend after surgery in the control (without T-Consciousness Fields treatment) group.

Microscopic examination

After two weeks of surgery, samples were taken from the grafted areas and transferred to the histology laboratory for H&E staining (Figure 4-6).

In the TCFs treatment group, the collagen fibers were thicker and denser than in the nontreatment group. The granulation tissue was characterized by numerous capillaries, mild fibroplasia, and inflammatory cells, re-epithelialization, and sebaceous glands. In the TCFs treatment group, the grafted areas showed better retention of connective tissue on the surface, with higher rates of re-epithelialization. However, beneath the transplanted skin, new skin formed, and the transplanted skin was gradually removed over a longer period of time.

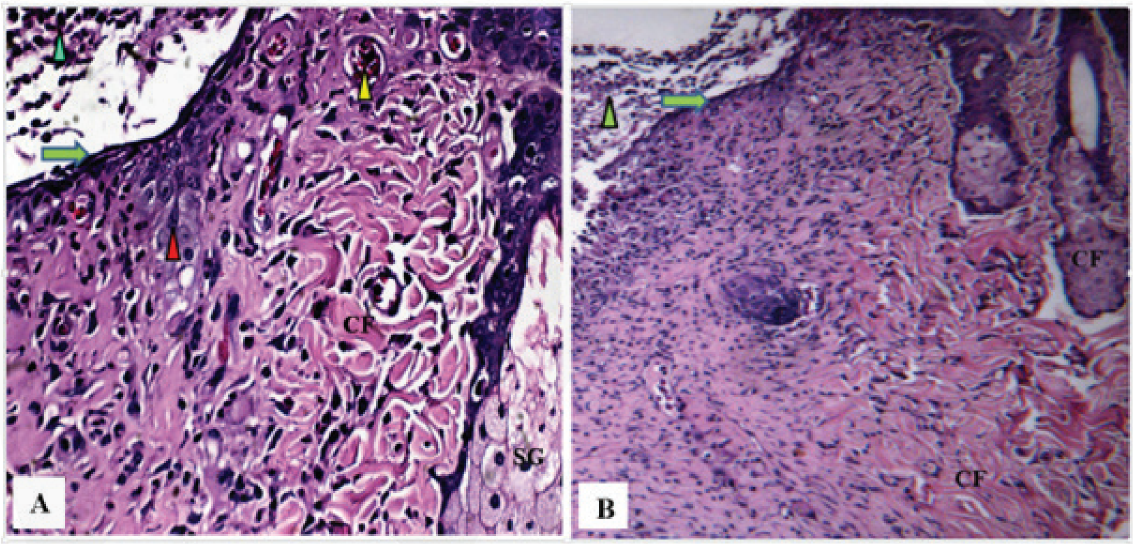

Figure 4. Histological features of grafted areas in the TCFs treatment group. A) The collagen fibers (CF) were thicker arranged and denser. Granulation tissue indicated by a high number of capillaries (yellow arrowhead), mild fibroplasia or mild infiltration of fibroblasts (red arrowhead) and inflammatory cells (green arrowhead), re-epithelization (arrow), and sebaceous gland (SG) was observed in this group (×200). B) The collagen fibers (CF) were thicker arranged and denser. The inflammatory cells (green arrowhead), re-epithelization (arrow), and sebaceous gland (SG) were observed (×100).

In the non-treatment group, the transplanted areas showed granular tissue and stages of new epidermis formation (re-epithelialization) under the scab, with no trace of the transplanted tissue. Also, grafted inflammatory cells were abundant and edema was visible. Destruction of the dermis, disorganization of the dermis, and the infiltration of a large number of inflammatory cells were observed. The epidermis was less thick and healthy due to degeneration.

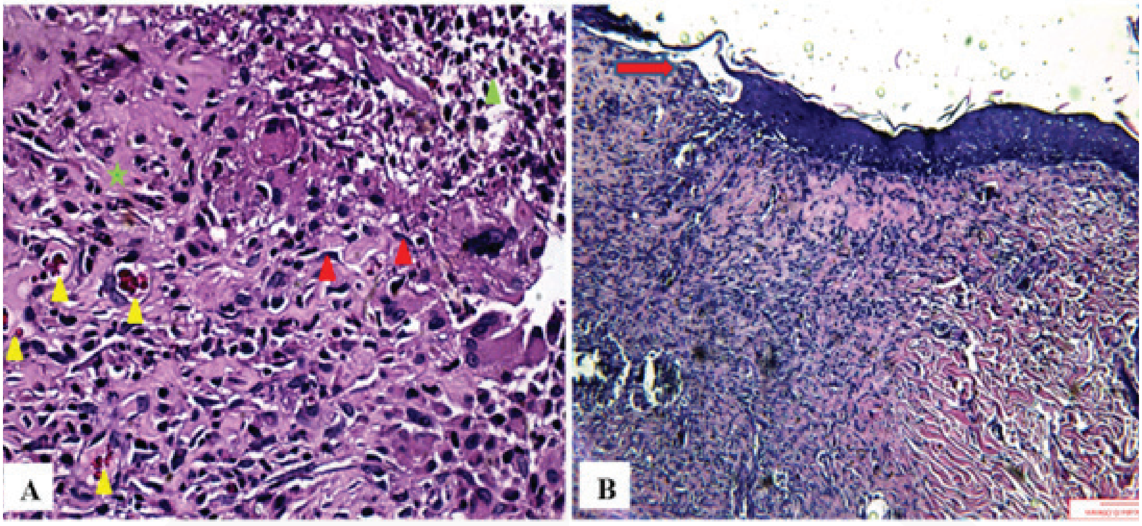

Figure 5. Histological features of grafted areas in the non-treatment group. A) The collagen fibers (star) were thin and weakly arranged. Granulation tissue is indicated by the high number of capillaries (yellow arrowhead), fibroplasia, or severe infiltration of fibroblasts (red arrowhead) and inflammatory cells (green arrowhead) (×200). B) The partial re-epithelization (arrow) was observed in this group (×100).

In the control group, a scab was seen on the wound that was healing, and under the scab, the formation of a re-epidermis, which was thickening, and under which the granulation tissue was being completed (Figure 6).

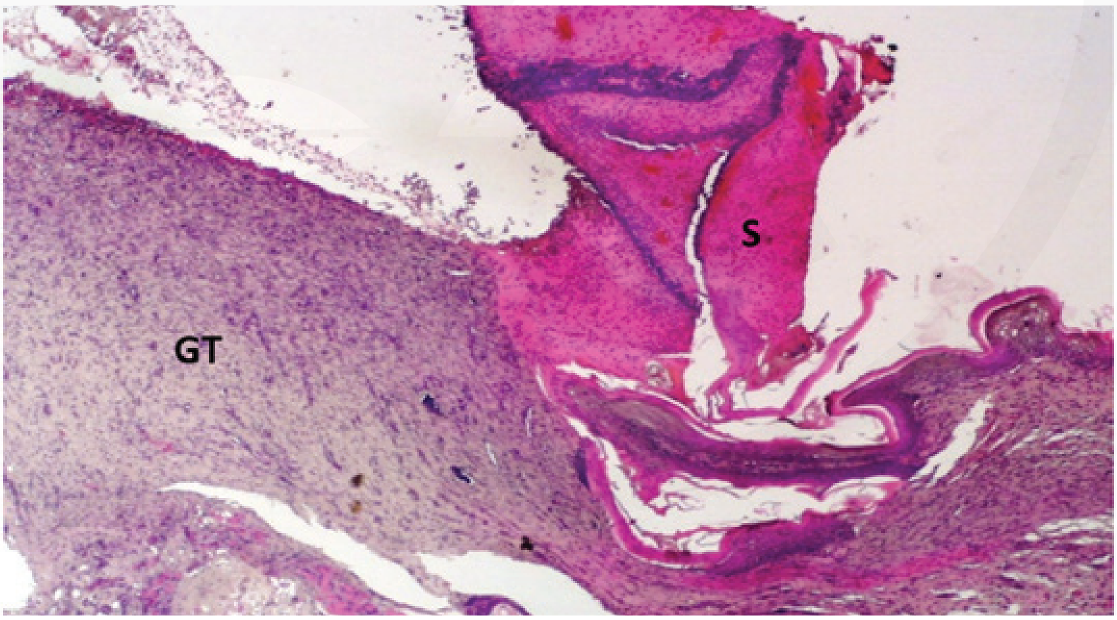

Figure 6. Histological feature of the control group. The scab is seen on a wound that is healing and below the scab (S) is the formation of a re-epidermis that is thickening and below that is the granulation tissue (GT) that is being completed. The image shows this area at ×40 magnification.

Discussion

Many researchers attempted to prolong skin allograft by suppressing the immune system, especially in patients with extensive burns (Rezaei et al., 2017). However, the side effects of immunosuppressive drugs can be severe, leading to a shorter life expectancy for transplant patients (Claeys et al., 2019). Therefore, there is a need for the development of a method that can increase skin allograft survival without side effects. It is proved that total and/or partial skin grafts cause modifications in the integumentary system, such as a decrease in blood flow, skin contractures, ischemic conditions, and formation of complete or partial necrosis after grafting (Cheng et al., 2017, Wang et al., 2016). Rejection of skin allografts is the response of the recipient's immune system resulting in the alloantigen recognition and cellular destruction. The short-term survival time of graft limits the clinical application of xenogeneic or allogeneic skin grafts (Dixit et al., 2017, Erdag et al., 2004). Our results showed that TCFs had stimulatory effects on better tissue adhesion located at the skin graft site which led to better skin graft performance.

As was mentioned in the introduction section, TCFs as non-material and non-energetic fields apply to all living (and non-living) entities/ systems. Although we cannot measure TCFs quantitatively it is possible to investigate their effects indirectly through various experiments. Recently, various experiments have been conducted using a wide range of subjects, including animal and plant models, as well as cells and microorganisms (Taheri et al., 2022f, Taheri et al., 2022c, Taheri et al., 2022e, Taheri et al., 2022h, Taheri et al., 2022d, Taheri et al., 2022i, Taheri et al., 2022a, Taheri et al., 2022b, Torabi et al., 2020, Taheri et al., 2022g).

The results showed significant changes in behavior and measured traits in TCFs-treated samples compared to non-treated controls. However, understanding the exact mechanisms of TCFs treatment requires further investigation. According to Taheri, when a sample is exposed to these fields, information transmitted via TCFs can lead to observable changes. This unique feature has encouraged researchers to evaluate the effects of TCFs. The current experiment provides evidence of the alleviative effects of TCFs on skin allografts in a rat model.

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Investigation of the Effects of T-Consciousness Fields on Alzheimer's Disease, Infertility and Skin Allograft: *In-vitro* and *In-vivo* Models

According to Taheri's theory, in addition to matter and energy, the cosmos is composed of a third element called T-Consciousness. It can be likened to a triangle, where T-Consciousness is not only non-physical and non-energetic in nature, but is also the source from which matter, energy, and even information originate. In this viewpoint, there are various T-Consciousness Fields (TCFs) with different functions that are the subcategories of the Cosmic Consciousness Network. A unique feature of the T-Consciousness theory is its ability to be tested practically, which has led researchers to design experiments to study its effects.

According to Taheri, applying T-Consciousness Fields (TCFs) to subjects under study results in the transmission of information through these fields. Therefore, the changes observed in samples influenced by these fields can be recorded and compared with control samples. In the current issue, its alleviative effects on in-vitro and in-vivo models of Alzheimer's disease and infertility are investigated, providing valuable insights for future clinical studies and practical applications.

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