The Scientific Journal of CosmoIntel
The First Scientific Journal in T-Consciousness Research

Effect of Faradarmani Consciousness Field on the Mice 4T1 Breast Cancer Model

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DOI https://doi.org/10.61450/joci.v1i6.54

Abstract

The use of complementary and alternative medicine along with conventional methods of chemotherapy and radiation therapy, with the aim of cancer prevention and treatment, has been investigated and validated in various preclinical and clinical studies. Meanwhile, in contrast to the widespread use of medicinal plants and other complementary and alternative medicine methods in the preclinical trials with animal models of cancer, as an important step confirming the safe and effective use in humans, similar studies in the field of mind-body modalities are rarely examined. A new treatment method founded and introduced by Mohammad Ali Taheri provides a different type of consciousness that is neither matter nor energy. The effectiveness and capability of a new complementary and alternative medicine were examined in this study, and the effectiveness of one of T-Consciousness Fields (TCFs) named Faradarmani, was investigated in the 4T1 orthotopic breast cancer spontaneous metastasis Balb/c mouse model. According to the results, Faradarmani Consciousness Field treatment, during tumor progression, had a significant effect on inhibiting the growth of cancerous masses and preventing metastasis in the mice animal model under the study. Moreover, this treatment had a significant positive effect on survival behavior and natural vital functions of the treated mice in comparison with the untreated control group.

Keywords: Faradarmani; Taheri Consciousness Fields; Cosmic Consciousness Network; breast cancer; 4T1 model; complementary and alternative medicine

Introduction

Cancer is one of the leading causes of death in the world. According to the World Health Organization (WHO, 2020), there were 2.3 million women diagnosed with breast cancer and 685 000 deaths globally. Breast cancer is one of the world's most prevalent cancer diseases with high incidence rates in all countries (Ganz et al., 2015). After coronary heart disease and accidents, cancers are the third cause of death in Iran (Mousavi et al., 2009; Farhood et al, 2018). Metastasis represents the most destructive stage of cancer in which it is difficult to remove tumors as well as treat cancer. For solid tumors, about 66.7 % of cancer deaths were registered with metastases as a contributing cause (Dillekås et al., 2019). Thus, understanding the biology of metastases and accurate diagnosis in the early stage is a promising strategy to reduce cancer mortality.

Many patients with cancer use complementary and alternative medical (CAM) therapies and about 50% already use CAM alongside cancer therapy (Ciarlo et al., 2021). Given the high prevalence of CAM use in patients, more research is required to determine whether they are efficacious. Among CAMs, various mind-body therapies have also been used for disease prevention, immune system enhancement and symptom control by cancer survivors (Mayden, 2012).

According to the guidelines of WHO, in order to evaluate the effectiveness of any treatment for various human diseases, it is first necessary to conduct preclinical studies in cellular laboratory conditions (*In vitro*) and in animal models (*In vivo*). In the field of cancer research, the use of animal-based research can be a valuable tool for the preclinical investigation of anti-cancer therapeutics and cancer prevention. The mouse has been the traditional animal model for basic and preclinical studies of cancer (Yee et al., 2015). The breast carcinoma 4T1 cell line is an appropriate candidate for studying the processes of metastasis and understanding its molecular mechanisms (Aslakson et al., 1999). Mouse breast cancer has been used to investigate the effects of a variety of complementary and alternative medicine techniques, such as Therapeutic Touch (Gronowicz et al., 2015) and largely herbal medicine (Chen et al., 2007; Xu et al., 2011). The use of animal models for evaluating the effectiveness of conventional methods of mind-body therapy, such as meditation and mindfulness is impossible, due to the necessity for the active role of the recipient of the treatment.

The nature of consciousness and its place in science have 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-energy nature named T-Consciousness Fields (TCFs). In this perspective, T-Consciousness is one of the three existing elements of the universe apart from matter and energy. The influence of TCFs is initiated through a short attention to the subjects of the study. This feature has provided the opportunity of designing various experiments on living organisms and inanimate materials (Taheri, 2013). The present study was aimed to investigate the effects of Faradarmani, as a suggested complementary and alternative medicine approach on the 4T1 mice model of breast cancer.

Materials and Methods

Faradarmani CF (FCF) application

TCFs were applied to the samples according to the protocols regulated by the COSMOintel research center (www.cosmointel.com). More details are presented in the general considerations of this issue. In this research, two groups (mentioned in below) were under the influence of FCF for 4 weeks.

Cell Allograft Metastasis Mouse Model

The 4T1 Cell Culture and Harvest

4T1 mouse mammary tumor cells were cultured in RPMI 1640 medium containing 10% fetal bovine serum (FBS), 100 units/mL of penicillin and 100 µg/mL of streptomycin in a humidified atmosphere containing 5% CO2 at 37 ◦C. Then, the cells were collected, and after centrifugation; they were calculated by Neo-Bar lam (Yang et al., 2012).

Tumor cell injection to mice

Simultaneously with the previous step, twenty 6–8 weeks female Balb/c mice were obtained from the Faculty of Veterinary Medicine, Urmia University, and kept under standard laboratory conditions until the 4T1 cancer cells, triple-negative mouse breast cancer, (PR^-, ER^-, HER^-) were prepared for injection. 1×10^4 cells were inoculated into the back of each mouse subcutaneously. Fourteen days after injection, tumor nodules were observed in the back of the mice (Figure 1).

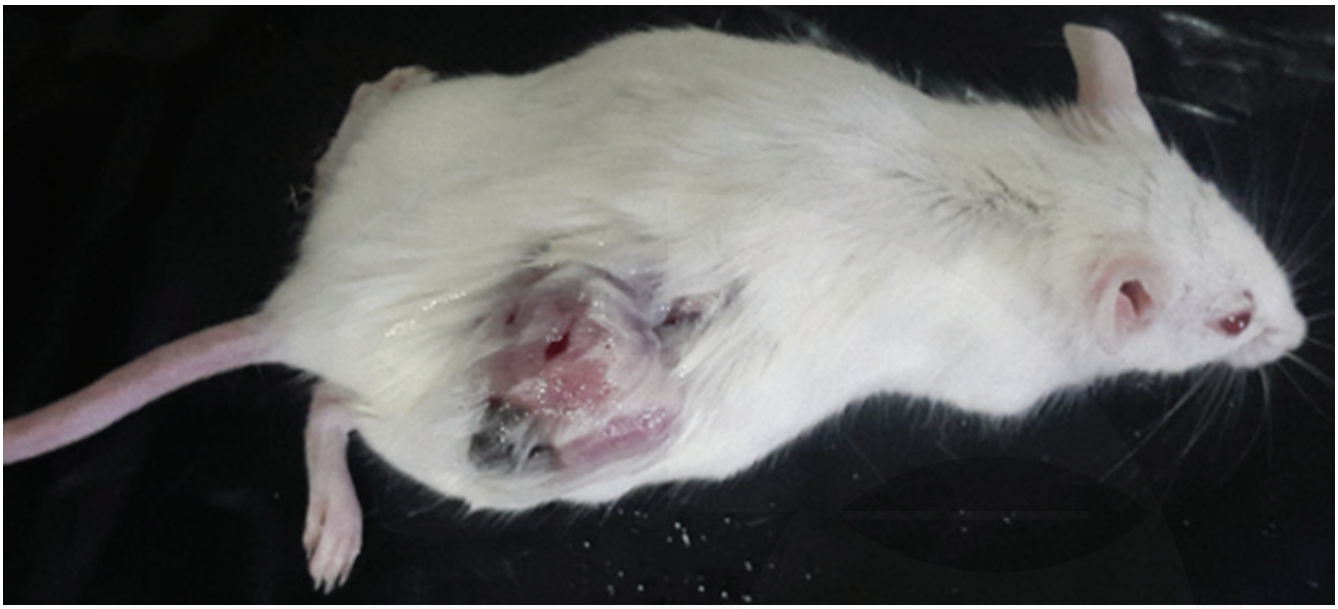


Figure 3. Figure1. The cancer mouse model, 14 days after the 4T1 cell injection.

There were four groups (n= 5 mice), including the negative control, the cancer FCF pretreatment group, the cancer FCF post-treatment group, and cancer control group. More explanation is mentioned in the first part of the result section.

Histology of tumor cells and selected organs

Tumor, liver and spleen samples were harvested and fixed in 10% neutral buffered formalin for 48 h, processed routinely, after which the tissues were embedded in paraffin, sectioned onto slides and their morphologies were observed using hematoxylin and eosin (H&E) staining (Hou et al., 2011).

Results

Tumor size in each group

Four groups are mentioned below, and an image of one member of each group is presented in Figure 2. Moreover, the tumors sizes of groups 2 and 3 are illustrated in Figures 3 and 4, respectively.

- Group 1- five mice without any injection (as the negative control group) (Figure 2a).
- Group 2- five mice received 1×10^4 4T1 cells subcutaneously and at the same time were influenced by FCF (as a pretreatment sample group which is getting cancer – the model of the preventive effect of FCF) (Figure 2b).
- Group 3- five mice received 1×10^4 4T1 cells subcutaneously, and after 14 days, were influenced by FCF (as a sample group that received cancer and then treated- the model of the corrective effect of FCF) (Figure 2c).
- Group 4- five mice received 1×10^4 4T1 cells subcutaneously without the FCF treatment (as the cancer control group) (Figure 2d)

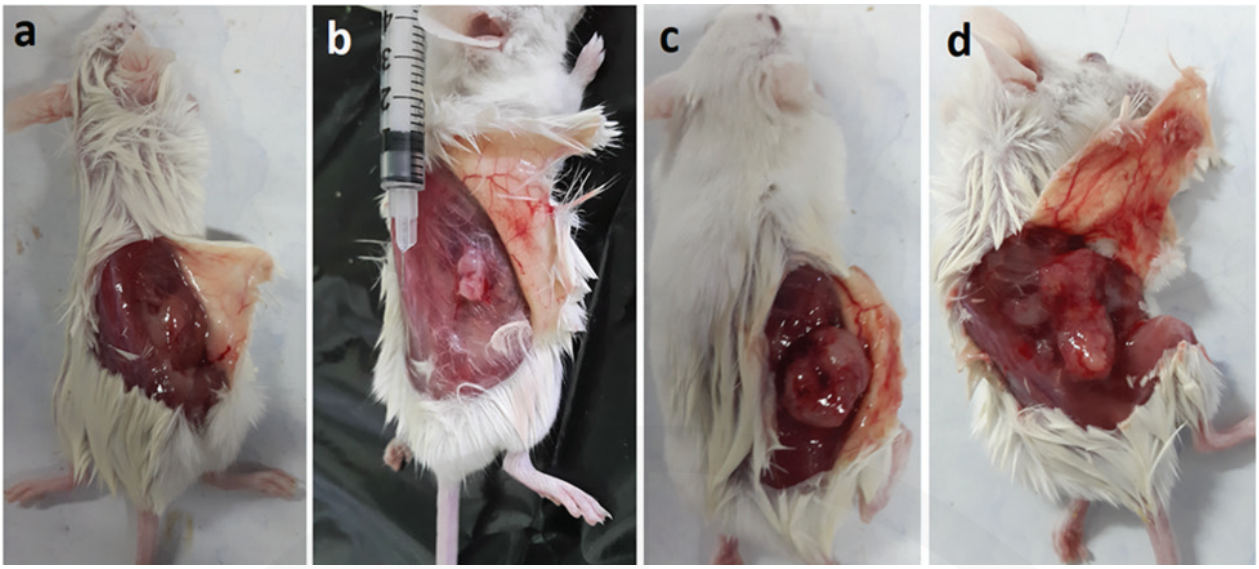


Figure 2. Dissection of one member of each group of the study. (a) The control mouse model. (b) The mouse model receiving cancer, and at the same time influenced by Faradarmani treatment (c) The mouse model received cancer, and then influenced by Faradarmani (d) The mouse model received cancer without Faradarmani treatment.

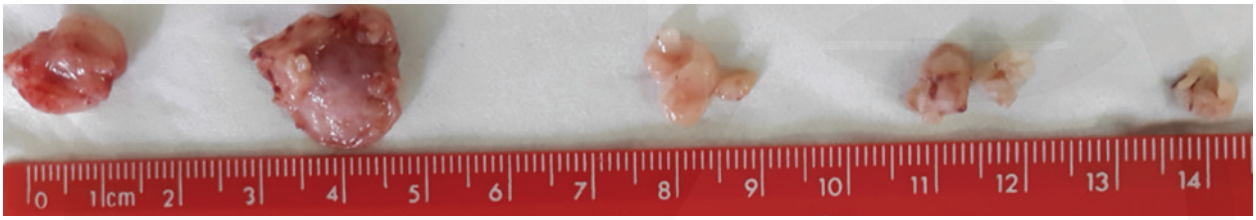


Figure 3. The size of tumors in group 2 (pretreatment model of the Faradarmani application).

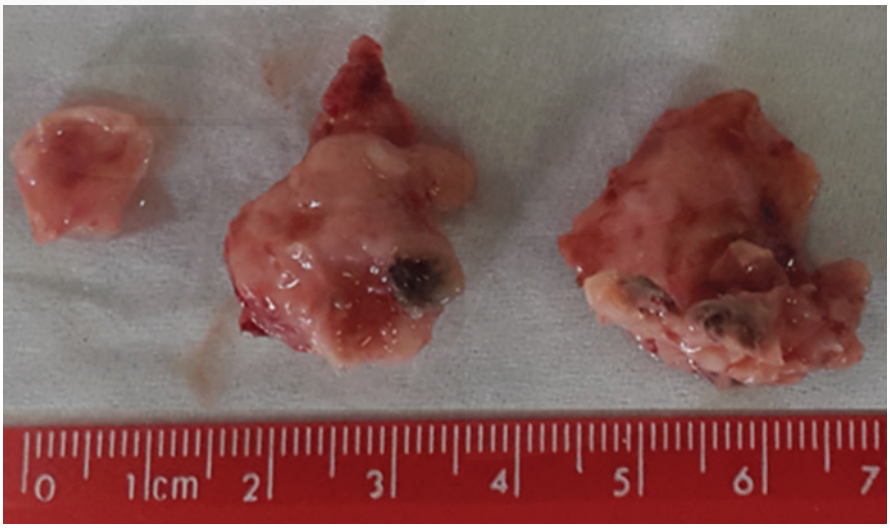


Figure 4. The size of tumors in group 3 (post-treatment model of the Faradarmani application).

After surgery, the weight, size and volume of tumors in the three groups (2, 3 and 4) were measured and compared with each other (Table 1). The data showed that the tumor volumes and weights of treated mice in the preventive approach (group 2) decreased significantly in comparison with the positive control mice (group 4) by about 95% and 75%, respectively. Moreover, according to the data, there is no significant difference in the size and weight of tumors in group 3 (the FCF post-cancer treatment), and group 4 (cancer without treatment).

Table 1. Average size, volume and weight of tumors in different mice groups of this study.

Groups	Average size/mm (length * width * diameter)	Average volume / mm^3	Volume range / mm^3	Average weight / gr	Weight range/ gr
2	10.2*8.2*0.76	63.56	2.4-459	0.38	0.04-0.7
3	18.1*16.3*3.6	1062	180-2622	1.42	0.21-2.1
4	19.2*17.1*3.5	1149	94.5-2990	1.51	0.46-2.4

Histology of tumor mass, liver and spleen in each group

Microscopic slides of tumor mass, liver and spleen cross-sections in each group of the present study can be seen in Figures 5, 6 and 7, respectively. In confirming and completing the results of the previous section, the histologic analysis showed the development of the tumor in the FCF pre-treated, and the FCF post-treated mice (Fig. 6) with remarkable differences in size.

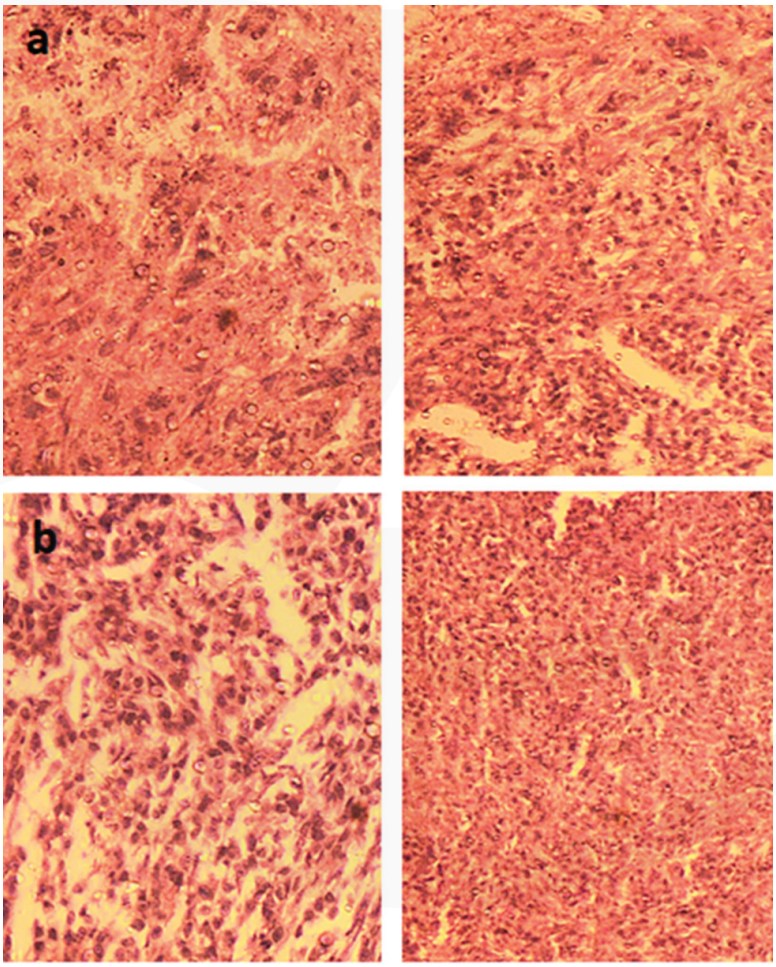


Figure 5. Microscopic slides of tumor mass in group 2 (a) and group 3 (b) in BALB/c mice. (The slides on the left show a scale bar of 200 μm, and the slides on the right show a scale bar of 100 μm.)

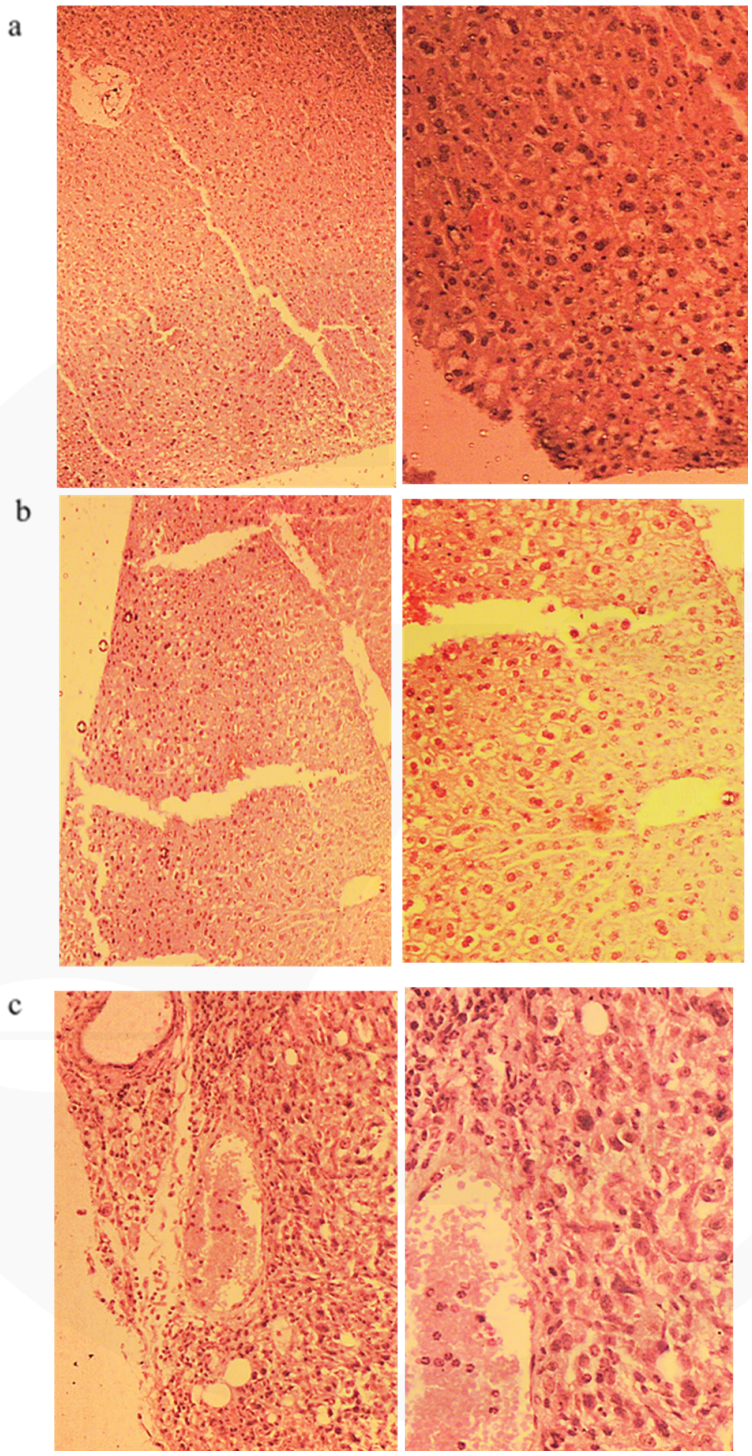


Figure 6. Microscopic slides of the liver in control (a), group 2 (b) and group 3 (c) in BALB/c mice. (The slides on the left show a scale bar of 100 μm and the slides on the right show a scale bar of 200 μm.)

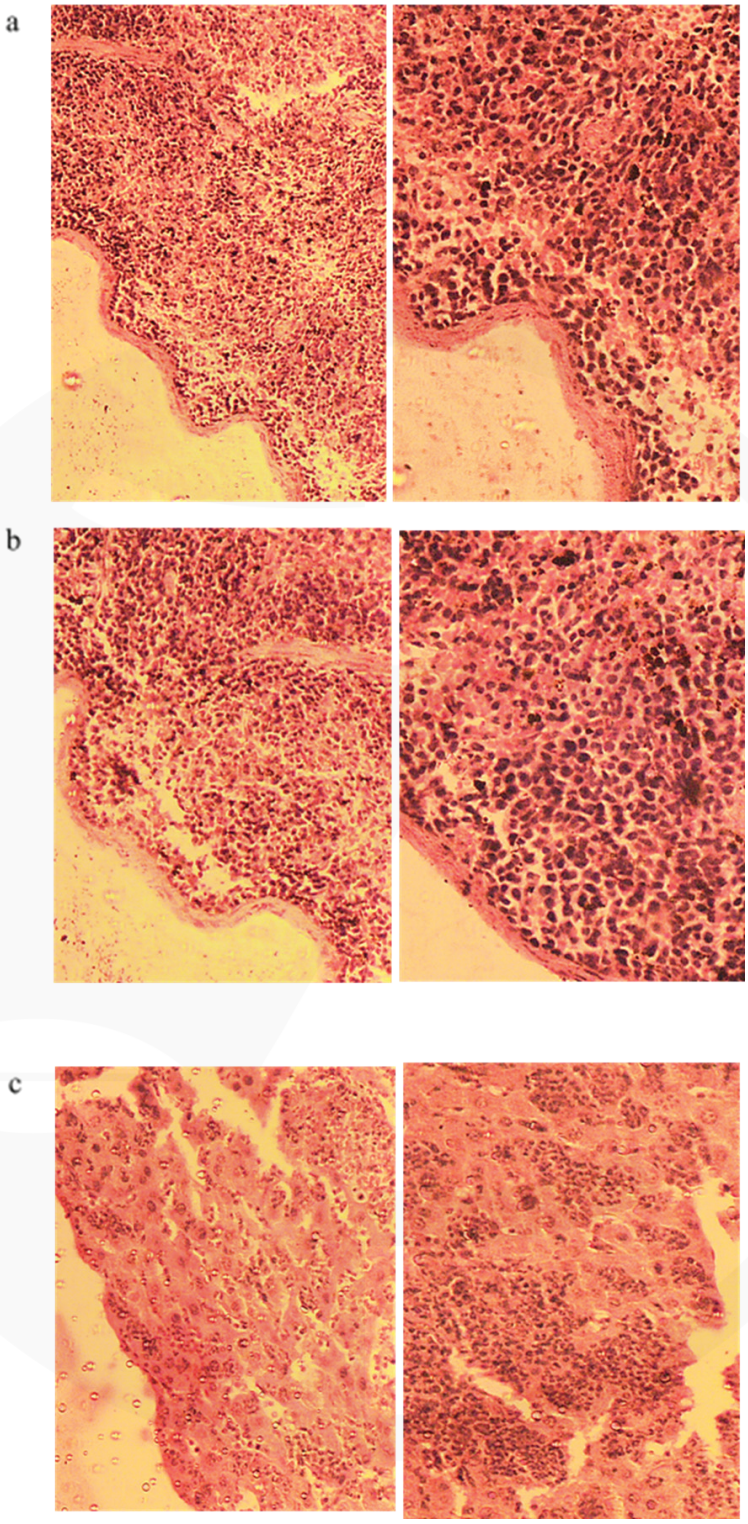


Figure 6. Microscopic slides of the spleen in control (a), group 2 (b) and group 3 (c) in BALB/c mice. (The slides on the left show a scale bar of 100 µm and the slides on the right show a scale bar of 200 µm.)

As can be seen in Figures 6 and 7, the FCF post-treated mice, in addition to tumor formation and enlargement, showed liver and spleen metastases, which was similar to group 4 (cancerous mice, untreated with FCF). However, FCF pre-treated mice had less tumor growth and their livers and spleens were similar to healthy mice (control group). In other words, the livers and spleens of the FCF pre-treated mice were not involved with the breast tumors.

Survival and behavior of mice

It is observed that two of the five mice in group 3 died before the end of the FCF treatment and the rest of them still had tumor burden, but with reduced tumor size. In contrast, the mice in group 2, had no evidence of disease and all five animals were alive. It was observed that one mouse in each control group (1 and 4) died. Interestingly, the only group without any death was group 2, in which pre-treatment with FCF resulted in significant improvement in the survival of treated animals. After surgery, it was found that not only the tumor sizes in groups 3 and 4 were remarkably larger than in group 2, but also a significant increase in liver and spleen size and tissue destruction occurred in group 2 (similar to negative control: group 1); these complications were not observed at all.

Discussion

Due to the prevalence of various types of cancer, using complementary and alternative medicine is one of the topics of interest and reference of researchers and experts globally. FCF as one of the TCFs has been introduced as a complementary therapy by Taheri. In this study, the effects of FCF on tumor growth and metastasis were examined. According to the results, the use of FCF in the model of induced cancer in mice, in the pretreatment model, completely led to the survival of mice, limitation of tumor size and no metastasis. On the other hand, its use after complete tumor formation in mice does not achieve these results. These data suggest that (simultaneous) pre-treatment of mice receiving cancer with FCF can lead to tumor control and inhibition. However, post-tumor therapy did not inhibit the tumor growth (group 3) which was similar to untreated tumors (group 4).

As it was explained briefly in the introduction section, this experiment provided evidence of effectiveness of FCF on an animal model. Although we cannot measure FCF directly and its mechanism is not clear yet, it is possible to investigate its effect through i*n vivo* and *in vitro* experiments (Phase 0 in studying TCFs). Since the effect of FCF is initiated without any kind of physical intervention, it can be considered a safe way to control and prevent diseases like cancer.

These observations were in accordance with previous studies (Taheri et al., 2020; Taheri et al., 2021b; Taheri et al., 2022). Due to the remarkable results of this study in reducing the size and weight of the tumor in the animal model of cancer, conducting a study at the level of primary cancer cells and clinical human studies of this and other types of cancer, is on the research agenda of the authors.

Acknowledgments

The authors would like to acknowledge the Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran, for providing the data acquisition service for this research work.

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