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

Effect of Faradarmani Consciousness Field on the Susceptibility of *Candida albicans* and *Aspergillus fumigatus* to Antifungal Drugs

Mohammad Ali Taheri[1], Laleh Amani[2], Simin Sharifi[3], Ali Zaman Vaziri[4], Hossein Keyvani[5*]

1. Sciencefact R&D Department, Cosmointel Inc. Research Center, Ontario, Canada
2. Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
3. Department of Pharmaceutical Biotechnology, Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran
4. Cancer Biomedical Center (CBC) Research Institute, Tehran, Iran
5. Department of Virology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran

* Corresponding author: Hossein Keyvani, Department of Virology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.
Email: Keyvanlab@yahoo.com

DOI https://doi.org/10.61450/joci.v1i3.24

Abstract

A suitable antifungal therapy is needed to achieve successful patient outcomes for all serious fungal infections. Only a few antifungal agents are available, so the emergence of resistance to a single drug and, currently, multidrug resistance has critically hampered the management of patients. Faradarmani Consciousness Field (CF), introduced by Taheri, is neither energy nor matter and does not have a quantity, so it cannot be directly measured. Nevertheless, their effects can be assessed indirectly through controlled laboratory experiments. This study aimed to evaluate the effect of Faradarmani CF on the susceptibility of *Candida albicans* and *Aspergillus fumigatus* to antifungal drugs. For this purpose, antifungal susceptibility was assessed via the disk diffusion method to evaluate the Faradarmani CF effect. Faradarmani CF significantly reduced the resistance of *C. albicans* and *A. fumigatus* to nystatin. As well as reduced resistance to amphotericin B, this difference was observed in both fungi, but it was not significant compared to the control. Considering the results, the drug resistance of *C. albicans* and *A. fumigatus* decreased under the influence of Faradarmani CF, and it can be examined *in vivo* for fungal infections. In addition, it is recommended that the effects of Faradarmani CF on other drug-resistant pathogens be investigated.

Keywords: Faradarmani Consciousness Field, Taheri Consciousness Fields, *Candida albicans, Aspergillus fumigatus*

Introduction

The invasive mycoses caused by opportunistic pathogenic fungi such as *Aspergillus fumigatus* and *Candida albicans* have increased considerably over the past three decades (Hajjeh et al., 2004; Seagle et al., 2021). This increase in infections is directly correlated with an increase in the population of at-risk patients, leading to the development of serious fungal infections and excessive morbidity and mortality (Gudlaugsson et al., 2003; Rayens et al., 2021). Serious, life-threatening fungal infections have been reported with a growing number of pathogens, including *C. albicans* and *A. fumigatus,* which are well-known opportunistic pathogens (Pfaller et al., 2004).

Resistance to the available three types of antifungal drugs (echinocandins, azoles, and polyenes) can severely restrict treatment options. Drug resistance is particularly concerning for severe infections that may be harder to treat, such as invasive fungal infections, which affect the heart, brain, eyes, blood, or other parts of the body (Gupta et al., 2021; Seagle et al., 2021; Fernández-García et al., 2017).

According to Taheri's theory, there are various T-Consciousness Fields with different functions that are a subset of the Cosmic Consciousness Network. These fields do not have a physical or frequency nature and cannot be measured directly using quantitative tools. More details about this theory are provided in the Common Considerations section of this issue. In short, the possibility of practical investigation of these fields allows researchers to study them by designing numerous experiments (Taheri, 2013). In this study, the effect of Faradarmani CF on the resistance of *C. albicans* and *A. fumigatus* to antifungal drugs amphotericin B and nystatin was investigated.

Material and Methods

Applying the Faradarmani CF

The studied samples were influenced by the Faradarmani Consciousness Field, according to the guidelines set up at the Cosmo Intel Research Center (www.COSMOintel.com).

In the present study, Faradarmani CF was applied to the treatment group using the disk diffusion method after fungal culture and before inserting the disks. The Faradarmani CF was only applied to the plates of the treatment group.

Evaluation of the effect of different dilutions of amphotericin B and nystatin

The effects of amphotericin B and nystatin on *C. albicans* and *A. fumigatus* were measured by the disk diffusion method (Fothergill, 2012). In the first stage, the effects of different dilutions of amphotericin B and nystatin on fungi were investigated, and the minimum effective concentrations of the drugs were calculated. Then, the effect of Faradarmani CF on fungi was measured at the selected drug concentration.

C. albicans and *A. fumigatus* were obtained from laboratory archives and were cultured on Sabouraud Dextrose Agar (SDA) medium. It was used from *A. fumigatus* spores and the *C. albicans* yeast phase for the agar diffusion test. Fungal inocula contained 1 $\times 10^6$ to 5×10^6 cells/mL (0.5 McFarland densities), and the standard suspension was used for agar diffusion methods (Fothergill, 2012).

Before experimenting, to evaluate the effective concentrations of antibiotics, different dilutions of amphotericin B (Sigma) and nystatin (Jaber ibn Hayan, Iran) were prepared. Prepared dilutions of amphotericin B were 200, 20, and 2 mg/mL, as well as 200, 20, and 2 µg/mL for *C. albicans* and *A. fumigatus,* respectively. Dilutions of 10,000, 1,000, 100, and 10 units/mL of nystatin were prepared for both fungi. Finally, two concentrations of nystatin, 10 units/mL and 100 units/mL, against *C. albicans* and *A. fumigatus* were selected. As well, two concentrations of amphotericin B, including 2mg/mL and 200 µg/mL for *C. albicans* and *A. fumigatus,* were selected, respectively. The blank disks were placed in microtubes containing different dilutions of the drugs for 5 minutes. After ensuring that the disks were properly mixed with the evaluated drugs by shaking the microtubes for 1 minute, the disks were placed in three replicates on cultured plates. The plates were incubated at 37 °C for 24 hours. The inhibiting zone was measured. The selected

amounts for each drug, based on the appropriate zone diameter, were determined to prevent fungal growth. Disk diffusion tests were performed with disks containing selected concentrations of drugs in treatment and control groups (Faradarmani CF).

Statistical analysis

The independent t-test was used to assess the significance of differences between the control and treatment groups; $p < 0.05$ was considered statistically significant.

Results

For the evaluation of Faradarmani CF effect on the susceptibility of *C. albicans* and *A. fumigatus* to nystatin and amphotericin, two concentrations of nystatin, including 10 units/mL and 100 units/ mL, were selected against *C. albicans* and *A. fumigatus,* respectively. Two concentrations of amphotericin B, including 2mg/mL and 200 µg/mL for *C. albicans* and *A. fumigatus,* were selected, respectively. The results of the disk diffusion test showed a significant effect of Faradarmani CF on the zone size in plates treated with Faradarmani CF compared to the control plates (untreated with Faradarmani CF) in the fungi treated with nystatin. In addition, the zone size increased in the plates treated with Faradarmani CF in the fungi treated with amphotericin, but this increase was not significant compared to the control (Table 1).

Table 1. The zone size (mm) of *A. fumigatus* and *C. albicans* against nystatin and amphotericin in Faradamani CF treatment and control groups ($p < 0.05$*)

	Nystatin		Amphotericin B	
	Control	FCF treatment	Control	FCF treatment
A. fumigatus	16.25 ± 1.7	20.75 ± 2.21*	15.25 ± 2.21	16 ± 1.8
C. albicans	16 ± 0.81	24.75 ± 2.9*	9.75 ± 1.7	11 ± 1.8

FCF: Faradarmani Consciousness Field

Discussion

The use of antifungal drugs to treat fungal infections can lead to antifungal resistance (Revie et al., 2018). Resistance to almost all antifungal drugs has been described in various pathogens, including *Aspergillus* and *Candida* species (Beardsley et al., 2018). Treatment options for controlling fungal infections are limited, and combining multiple drugs to achieve a better therapeutic effect is tempting. In recent years, several new resistance patterns have been observed, including antifungal resistance from environmental sources in *A. fumigatus* and the emergence of multidrug resistance (simultaneous resistance to multiple antifungals) in various *Candida* species (Sanglard, 2016). Finding a way to treat at-risk patient populations with drug-resistant fungal infections is essential.

Disk diffusion assays demonstrated that Faradarmani CF significantly enhanced nystatin's inhibitory activity, as evidenced by larger zone diameters on treated plates compared with untreated controls. Although an increase in inhibition zones was also observed in amphotericin B treated fungi exposed to Faradarmani CF, this effect did not reach statistical significance.

In previous research, we observed the effects of the TCFs on the MCF7 cancer cell line (Taheri et al., 2020a), spatial memory, and avoidance behavior of a rat model of Alzheimer's disease (Taheri et al., 2021a), tolerance of Triticum *aestivum* L. under salinity stress (Torabi et al., 2020), bacterial population growth (Taheri et al., 2021b), and the electrical activity of the brain during Faradarmani in the Faradarmangars population (Taheri et al., 2020b).

TCFs are not directly measurable, but their effects can be investigated indirectly through various experiments. Overall, these results suggest that Faradarmani CF may potentiate the antifungal efficacy. We suggest that further research be conducted on the effect of Faradarmani on other drug-resistant microorganisms to investigate its impact on their antimicrobial susceptibility.

Acknowledgments

The authors gratefully acknowledge the use of the laboratory, services, and facilities of the Keyvan Virology Specialty Laboratory (KVSL), Tehran, Iran.

Conflicts of Interest

The authors declare no conflict of interest.

References

Beardsley, J., Halliday, C. L., Chen, S. C., & Sorrell, T. C. (2018). Responding to the emergence of antifungal drug resistance: Perspectives from the bench and the bedside. *Future Microbiology, 13*(10), 1175–1191.

Fernández-García, R., de Pablo, E., Ballesteros, M. P., & Serrano, D. R. (2017). Unmet clinical needs in the treatment of systemic fungal infections: The role of amphotericin B and drug targeting. *International Journal of Pharmaceutics, 525*(1), 139–148.

Fothergill, A. W. (2012). Antifungal susceptibility testing: Clinical Laboratory and Standards Institute (CLSI) methods. In R. A. Calderone & W. H. Pruitt (Eds.), *Interactions of yeasts, moulds, and antifungal agents* (pp. 65–74). Springer.

Gudlaugsson, O., Gillespie, S., Lee, K., Berg, J. V., Hu, J., Messer, S., Herwaldt, L., Pfaller, M., & Diekema, D. (2003). Attributable mortality of nosocomial candidemia, revisited. *Clinical Infectious Diseases, 37*(9), 1172–1177.

Gupta, A. K., Venkataraman, M., Renaud, H. J., Summerbell, R., Shear, N. H., & Piguet, V. (2021). The increasing problem of treatment-resistant fungal infections: A call for antifungal stewardship programs. *International Journal of Dermatology, 60*(12):e474-e479.

Hajjeh, R. A., Sofair, A. N., Harrison, L. H., Lyon, G. M., Arthington-Skaggs, B. A., Mirza, S. A., Phelan, M., Morgan, J., Lee-Yang, W., & Ciblak, M. A. (2004). Incidence of bloodstream infections due to *Candida* species and in vitro susceptibilities of isolates collected from 1998 to 2000 in a population-based active surveillance program. *Journal of Clinical Microbiology, 42*(4), 1519–1527.

Pfaller, M., & Diekema, D. (2004). Rare and emerging opportunistic fungal pathogens: Concern for resistance beyond *Candida albicans* and *Aspergillus fumigatus*. *Journal of Clinical Microbiology, 42*(10), 4419–4431.

Rayens, E., Norris, K. A., & Cordero, J. F. (2021). Mortality trends in risk conditions and invasive mycotic disease in the United States, 1999–2018. *Clinical Infectious Diseases,* 74(2):309-318.

Revie, N. M., Iyer, K. R., Robbins, N., & Cowen, L. E. (2018). Antifungal drug resistance: Evolution, mechanisms and impact. *Current Opinion in Microbiology, 45*, 70–76.

Sanglard, D. (2016). Emerging threats in antifungal-resistant fungal pathogens. *Frontiers in Medicine, 3*, 11.

Seagle, E. E., Williams, S. L., & Chiller, T. M. (2021). Recent trends in the epidemiology of fungal infections. *Infectious Disease Clinics of North America, 35*(2), 237–260.

Taheri, M. A. (2013). *Human from another outlook* (2nd ed.). Interuniversal Press. ISBN-13: 9781939507006; ISBN-10: 1939507006

Taheri, M. A., Semsarha, F., Mahdavi, M., Afsartala, Z., & Amani, L. (2020a). The influence of the Faradarmani consciousness field on the survival and death of MCF-7 breast cancer cells: An optimization perspective. *SSRN Electronic Journal.*

Taheri, M. A., Semsarha, F., & Modarresi-Asem, F. (2020b). An investigation on the electrical activity of the brain during Fara-Darmani connection in the Fara-Therapist population. *SSRN Electronic Journal.*

Taheri, M. A., Torabi, S., Nabavi, N., & Semsarha, F. (2021a). Influence of Faradarmani consciousness field (FCF) on spatial memory and passive avoidance behavior of scopolamine model of Alzheimer disease in male Wistar rats. *SSRN Electronic Journal.*

Taheri, M. A., Zarrini, G., Torabi, S., Nabavi, N., & Semsarha, F. (2021b). Influence of Faradarmani consciousness field on bacterial population growth. *bioRxiv.*

Torabi, S., Taheri, M. A., & Semsarha, F. (2020). Alleviative effects of Faradarmani consciousness field on *Triticum aestivum* L. under salinity stress. *F1000Research, 9*, 1089.

Ms. Laleh Amani was a prominent, compassionate, and enthusiastic researcher at Cosmointel who passed away in 2021.