

Synergistic antifungal effect of fluconazole combined with quorum sensing molecules of *Candida parapsilosis* stricto sensu against *Trichophyton rubrum*

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INTRODUCTION

- The physical chemical interactions present in mixed microbiota niches induce changes in the physiology of microorganisms, thereby affecting cellular viability;
- The mechanism of these interactions should be explored, and the in vitro screening of new antifungal molecules is essential for the success of new therapeutic approaches.

OBJECTIVES

- The present study evaluated the synergistic interaction between a pure culture extract of *Candida parapsilosis* and fluconazole against *Trichophyton rubrum*.

MATERIAL AND METHOD

500-mL Inoculum prepared in Sabouraud Dextrose Broth was filtered through a 0.2 µm millipore membrane and separated using ethyl acetate as a counter-phase.



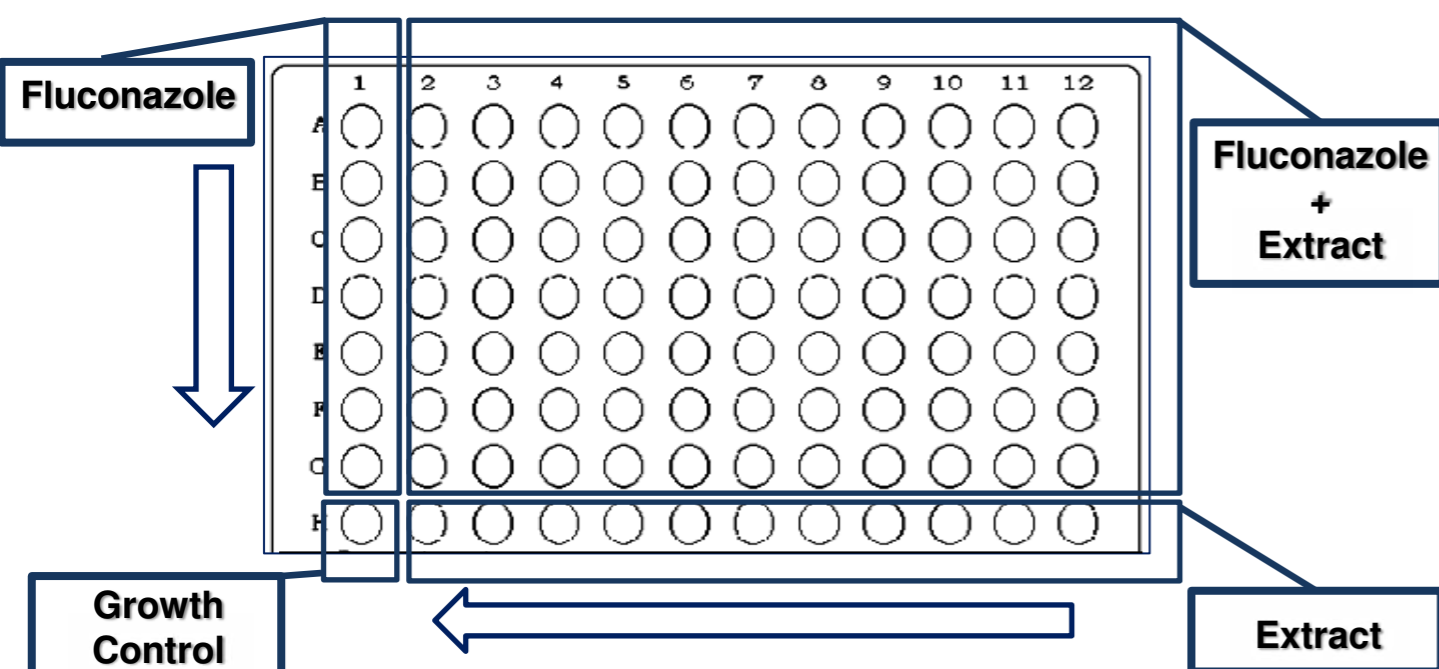
The ethyl acetate phase was dried completely using a rotary evaporator and subsequently solubilized in sterile distilled water with 10% dimethyl sulfoxide (DMSO).



Minimal Inhibitory Concentration (MIC) and a checkerboard microdilution assay with fluconazole was performed to evaluate the synergistic interaction with the extract based on the calculation of the fractional inhibitory concentration index (ICIF);

$$\text{ICIF} = (\text{MIC fluconazole in the mix} / \text{MIC fluconazole alone}) + (\text{MIC extract in the mix} / \text{MIC extract isolated})$$

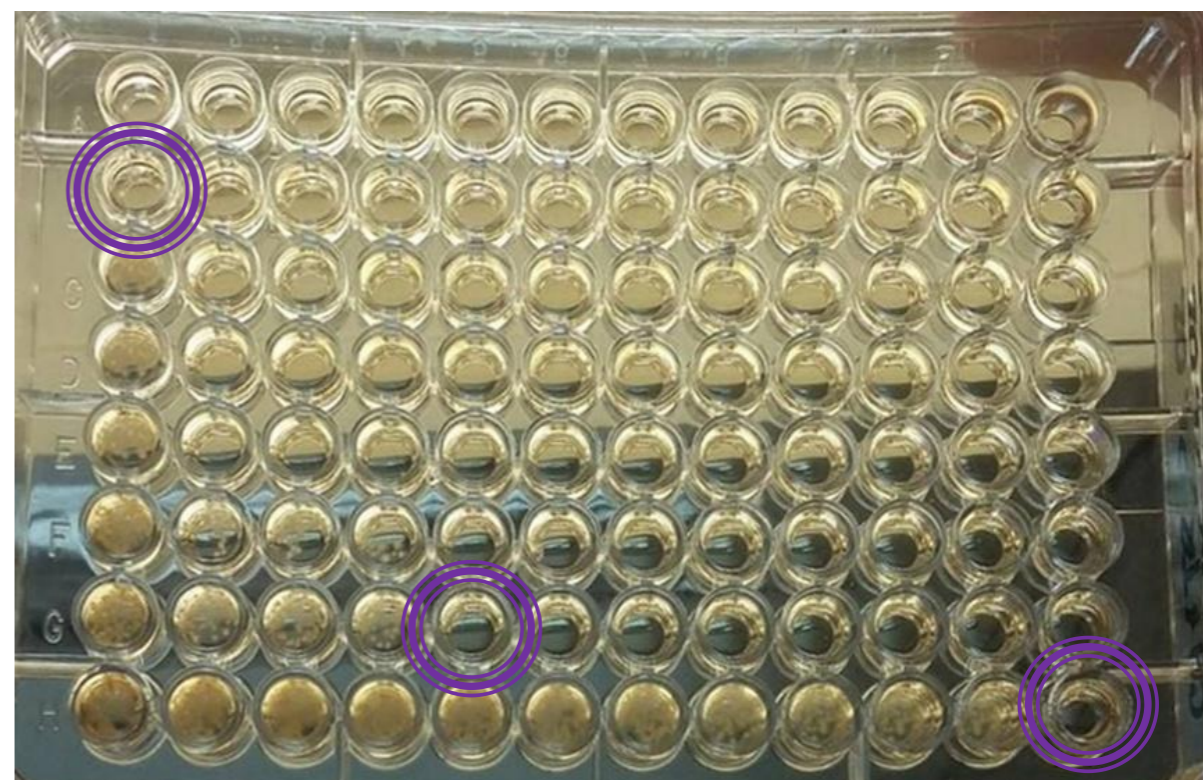
Values $\geq 0,5$ indicate significant interactions.



RESULTS

- The combination of culture extract of *C. parapsilosis* and fluconazole showed a synergistic interaction against *T. rubrum* (ICIF value of 0.03). MIC for fluconazole decreased from 8 to 0,25 µg/mL when combined with the extract (Figure 1).

Figure 1: Checkerboard microdilution assay



MIC of fluconazole
8 µg/mL

MIC of culture extract with fluconazole -
7,8 µg/mL/0,25 µg/mL

MIC of culture extract
C. parapsilosis
1000 µg/mL

DISCUSSION AND CONCLUSION

- The extract of *C. parapsilosis* shows antifungal activity against *T. rubrum*;
- The action of the extract is greater in association with an azole derivative, thus proving synergy;
- In the future, the isolation and identification of extract compounds may allow new therapeutic approaches in the control of fungal infections.

REFERENCES

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FINANCIAL SUPPORT