Aug 08, 2020 Version 2

## Otermination of minimum inhibitory concentration values (MICs) against Sporothrix brasiliensis and Sporothrix schenckii V.2

PLOS One

DOI

dx.doi.org/10.17504/protocols.io.bjgxkjxn

### luanaborba<sup>1</sup>

<sup>1</sup>Universidade Federal do Rio de Janeiro

L. P. Borba-Santos

luanaborba





DOI: dx.doi.org/10.17504/protocols.io.bjgxkjxn

#### External link: https://doi.org/10.1371/journal.pone.0240658

**Document Citation:** luanaborba 2020. Determination of minimum inhibitory concentration values (MICs) against Sporothrix brasiliensis and Sporothrix schenckii. **protocols.io** <u>https://dx.doi.org/10.17504/protocols.io.bjgxkjxn</u>

#### **Manuscript citation:**

Borba-Santos LP, Vila T, Rozental S (2020) Identification of two potential inhibitors of *Sporothrix brasiliensis* and *Sporothrix schenckii* in the Pathogen Box collection. PLoS ONE 15(10): e0240658. doi: <u>10.1371/journal.pone.0240658</u>

**License:** This is an open access document distributed under the terms of the <u>**Creative Commons Attribution License**</u>, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Created: August 08, 2020

Last Modified: August 08, 2020

Document Integer ID: 40183

# Determination of minimum inhibitory concentration values (MICs) against *Sporothrix brasiliensis* and *Sporothrix schenckii*

The minimum inhibitory concentration (MIC) of compounds was determined using the broth microdilution technique described by the CLSI<sup>1</sup> with modifications.

1. Stock solutions of compounds in dimethyl sulfoxide (DMSO) at 1 mM were diluted in RPMI 1640 medium<sup>2</sup> supplemented with 2% glucose<sup>3</sup> and buffered to pH 7.2, with 0.165 M MOPS (from here on referred to as "supplemented RPMI") to obtain solutions 4-fold concentrated using sterile microtubes;

2. Itraconazole<sup>2</sup> (reference antifungal) was also included in the experiment;

3. Aliquots of 100 μl of compounds were added in two wells of the first column of a flat-bottom 96-well microplate (KASVI, Brazil);

4. Aliquots of 100 μl of supplemented RPMI were added in all microplate wells (including wells containing compounds) using a multichannel pipette and a serial 2-fold dilution was performed to the tenth column;

5. The eleventh column corresponded to the positive controls (containing 100  $\mu$ l supplemented RPMI without compounds) and the twelfth to the negative controls (containing 200  $\mu$ l supplemented RPMI);

6. A standardized suspension of *Sporothrix* yeasts was adjusted using a Neubauer chamber, prepared in supplemented RPMI, and 100  $\mu$ l containing 2 × 10<sup>5</sup> CFU/ml was added in microplates containing compounds (except in the twelfth column);

7. Ten different concentrations of compounds were tested and their final concentration ranged from 0.002 to 1  $\mu$ M, while the final concentration of yeasts were 1 × 10<sup>5</sup> CFU/ml<sup>4</sup>;

8. Samples were incubated at 35 °C for 48 h, in a 5 %  $CO_2$  atmosphere<sup>5</sup>;

9. Fungal growth was analyzed by visual inspection in an inverted light microscope (Axiovert 100, ZEISS Company, Germany);

10. After visual inspection, samples were homogenized and the optical density was quantified by spectrophotometric readings at 492 nm, in a microtiter plate reader (EMax Plus, Molecular Devices, USA);

11. The absorbance value for each well was subtracted from the mean value for the negative controls;

12. Inhibition of fungal growth (I) relative to positive controls was calculated according to the following equation:  $I = 100 - (A \times 100/C)$ , where A is the absorbance of treated wells, and C is the absorbance of positive controls;

13. Concentrations that inhibit 50% and 80% of fungal growth ( $IC_{50}$  and  $IC_{80}$ , respectively) were estimated.

<sup>1</sup>CLSI. Reference Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts. 4th ed. CLSI standard M27.Wayne, PA: Clinical and Laboratory Standards Institute; 2017.

<sup>2</sup>Sigma Chemical Co., USA.

 $^3$  The RPMI medium was supplemented with 2% glucose to improve the growth of *Sporothrix* yeasts.

<sup>4</sup> The inoculum of  $1 \times 10^5$  CFU/ml was used due to the slow growth of *Sporothrix* yeasts.

 $^{5}$  Microplates were incubated in a 5% CO<sub>2</sub> atmosphere to maintain the culture in the yeast form.