R519
Publication Only
Mycology: Resistance and mechanisms of action of antifungals

Susceptibility patterns of *Candida nivariensis* isolates from yeast collection

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Objectives:
The most clinically relevant species of non - *albicans Candida* group are: *C. glabrata* and *C. parapsilosis*, because of their significant drug resistance and the expression of diverse virulence factors presented by strains. *C. glabrata* is known for its resistance to fluconazole - a first-line antymicotic for yeast infections treatment, and rapidly increasing cross-resistance to other antifungal substances from the azoles group. The two new species among *Candida glabrata* complex: *C. nivarensis* and *C. bracarensis* have been recently described. The aim of the study was the evaluation of the *Candida nivariensis* susceptibility patterns to chosen antymicotics.
Methods:
The *C. glabrata* strains used in this study originates from Mycological Laboratory collection. The isolation and the identification were performed according to standard diagnostic methods. Then the belonging to *Candida nivariensis* species was confirmed with the use of molecular tests (PCR and sequencing of D1-D2 region of the 26S rRNA gene). Susceptibility testing was performed using two different methods: E-test on RPMI agar and microdilution method (Sensititre, YeastOne). The results of susceptibility tests were interpreted according to EUCAST or CLSI recommendation.
Results
A total number of 224 strains were initially identified as *C. glabrata*. In the result of molecular biology tests, 13 strains with the lack of CGL1 gene specific for *C. glabrata*, were detected. All analyzed strains were susceptible to amphotericin B (EUCAST), voriconazole (CLSI), caspofungin (CLSI), andulafungin (EUCAST) and mycafungin (EUCAST). Most of the strains were resistant to fluconazole (77%) and itraconazole (61,5%). Among the analyzed group, 11 strains presented the MIC values for fluconazole <=4 mg/L. MIC range for itraconazole was: 0,125-32 [mg/l] and for posaconazole: 0,064-32 [mg/l]. No significant differences between E-testing and microdilution methods was established.
Conclusions
1. Susceptibility analysis of *C. nivarensis* strains indicated that isolates were characterized by high resistance to azoles with exception of voriconazole.
2. The species was most susceptible to candins.
Study financed by the National Science Centre (Grant no N N401 646140)