ABSTRACT BOOK ABSTRACTS



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INFECTIOUS DISEASES (BACTERIAL, FUNGAL, VIRAL, PARASITIC, INFESTATIONS)

## THE ROLE OF MRR2,CDR1 GENE MUTATION/OVEREXPRESSION IN FLUCONAZOLE-RESISTANT CANDIDA ALBICANS ISOLATES

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Background: Zinc transcription factor and efflux pump gene of Candida albicans play essential roles in the development of antifungal drug resistance, yet it is not clear whether Mrr2 and CDR1 can regulate and control the resistance.

Objective: Investigate the mutual effects among the mutation and/or overexpression of Mrr2, CDR1 and Fluconazole-resistant in Candida albicans isolates.

Materials and Methods: The in vitro drug susceptibility tests are conducted on 80 clinical isolates of Candida albicans, by M27-A3 broth microdilution method. The gene expression of Mrr2, CDR1 in all 80 isolates are measured by FQ-RT-PCR. All Mrr2 gene sequences are amplified by PCR, and the sequences are compared against a known Mrr2 sequence in GenBank to identify the mutation of Mrr2.

Results: The in vitro drug susceptibility tests of 80 isolates show that 40 isolates are susceptible to Fluconazole, 10 dose-dependent and 30 resistant. The mRNA levels of Mrr2 and CDR1 genes are significantly elevated in Fluconazole-resistant isolates compared with Fluconazole-susceptible isolates. Furthermore, the mRNA levels of Mrr2 was positively correlated with CDR1 in Candida albicans isolates, r = 37.6%. There are 12 mutations of Mrr2 identified from the 29 isolates. The mutation rate of Mrr2 in Fluconazole-resistant isolates (56.67%) is significantly higher than Fluconazole-susceptible isolates (26.08%). The drug resistance in Mrr2 mutation and overexpression group is 47.50 times higher than in the non-mutation and lower expression group.

Conclusions: The resistance to Fluconazole may be associated with the mutations and/or overexpression of Mrr2, CDR1 in Candida albicans isolates. In addition, overexpressed Mrr2 and CDR1 are found in Fluconazole-resistant isolates, and the mRNA levels of Mrr2 may be positively correlated to CDR1 in Fluconazole-resistant isolates. The mutation and overexpression of Mrr2 gene may have a synergistic effect on Fluconazole-resistant











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isolates.



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