

Mechanisms of resistance in fungi: molecular basis and possible new therapeutic strategies

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As relatively new human pathogens, many fungal species are well-recognized causes of life-threatening infections so as to represent major medical problems in the real-life setting. Medical practices such as usage of broad-spectrum antibiotics that affect the host microbiome, and of immunosuppressive therapy in the form of corticosteroids and effective chemotherapy for some cancers allow for the treatment of certain diseases but, in the same time, increase the host susceptibility to fungal infections. Other advances, such as complex surgeries, implantable devices and organ transplantation, are contributing to impair host defenses and increase susceptibility to fungi. As a result, invasive fungal infections (IFIs) are associated with substantial morbidity and mortality, and are increasingly caused by fungal species or subspecies with diminished susceptibility or resistance to many standard antifungal agents. Despite the availability of newer antifungal drugs, outcomes for patients with IFIs continue to be poor, thereby stimulating outstanding research in the field of relationships between fungal pathogenesis and antifungal resistance. Among yeasts, *Candida albicans* and *Candida glabrata* are the most common organisms responsible for invasive fungal diseases, whereas *Aspergillus fumigatus* is one of the most prevalent moulds to cause invasive fungal disease. Particularly, the raising of multi-resistant isolates of these species is becoming an important concern in treating this type of infection. In this talk, it will present and discuss the current status of the knowledge on this topic and some research data concerning the discovery of novel targeted strategies against pathogenic fungi, in particular *Candida glabrata*.