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ORIGINAL ARTICLE

Immunoproteomic analysis of antibody response to cell wall-associated proteins of *Candida tropicalis*

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Abstract

Aims: This study was conducted to identify antigenic proteins of *Candida tropicalis* that are targeted by the host immune system.
Methods and Results: An immunoproteomic approach was used to discover antigens from cell wall of *C. tropicalis* that were recognized by sera from experimentally infected mice. This resulted in the identification of twelve distinct proteins, of which ten have been previously reported as antigens of *Candida albicans*. For the remaining two proteins, Idh2p has been described as an antigen of *Candida parapsilosis*, whereas Kgd2p is revealed for the first time as an antigenic protein for *Candida* species. These two antigens were expressed as recombinant proteins in *Escherichia coli* and were shown to be specifically recognized by sera from infected host on Western blot.
Conclusions: The present work investigated immunoproteome of *C. tropicalis* and identified several biomarker candidate antigens, with Kgd2p as a novel immunogenic protein that could be associated with pathogenesis of *C. tropicalis*.
Significance and Impact of the Study: Findings from this study help to improve current understanding on host response to *C. tropicalis* infection and provide new insights into immune-pathogenesis of *C. tropicalis*. Besides, the immunogenic proteins could be considered as targets for the development of immunodiagnostic assay and/or vaccine.

Introduction

Candida species are commensal fungi in healthy individuals but are also opportunistic pathogens that can cause infection when the host immune system is weakened. Infection caused by *Candida* spp. can take on several forms, which vary from simple mucosal colonization to life-threatening systemic infection. The latter form is of particular importance as it is associated with high mortality and morbidity rate and substantial healthcare burden (Ortega *et al.* 2011). In United States, candidiasis was ranked as the fourth nosocomial bloodstream infection (Wisplinghoff *et al.* 2004). Importantly, nosocomial infections caused by *Candida* spp. have continued to increase over the past few decades (Concia *et al.* 2009).

Candida albicans is the main species isolated from clinical specimens and is the predominant causative agent of all type of candidiasis. However, a shift in the epidemiology trend has been observed in recent years as other *Candida* spp. are increasingly being isolated (Pereira *et al.* 2010; Rodloff *et al.* 2011). Remarkably, increase in the incidence of *Candida tropicalis* has been reported in several countries worldwide (Nucci and Colombo 2007; Yang *et al.* 2013). Similarly, *C. tropicalis* has shown significant increase in the frequency of isolation from local clinical samples in Malaysia (Hamid *et al.*