Pathogenic Fungi: from Polysaccharides to Glycoconjugates

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The fungal cell wall is of crucial relevance, controlling shape, protecting against mechanical damage, and functioning as a barrier, filtering external molecules. In its outer layer, the cell wall contains glycosylated molecules involved in important biological events related to virulence and pathogenicity, and represents a significant source of antigens. The cell wall is an excellent target for the action of antifungal agents, since most of its components are absent from mammalian cells. Over recent years, polysaccharides, peptidopolysaccharides, *O*-linked oligosaccharides and glycosphingolipids have been identified in pathogenic fungi. Their primary structures were determined based on a combination of techniques including gas chromatography, ESI-QTOF-MS, ^{1}H, ^{1}H-COSY and TOCSY, ^{13}C, and ^{1}H(obs), ^{13}C HMQC NMR spectroscopy. The role of each molecule on fungal physiology and pathogenesis is only beginning to be elucidated. Some of them have been shown to be useful for diagnosis of fungal infections and also to influence the interaction of pathogens with their host cells. Monohexosylceramides (cerebrosides), having highly conserved structures, are involved in morphological transition and fungal growth. Determination of structural and functional aspects of fungal glycoconjugates could contribute to the design of new agents capable of inhibiting fungal growth and differentiation of pathogens.

Supported by: CNPq, FAPERJ, PRONEX