MELANIZATION OF PATHOGENIC FUNGI, PARTICULARLY ASPERGILLUS FUMIGATUS AND PENICILLIUM MARNEFFEI

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Melanin is made by several important pathogenic fungi and has been implicated in the pathogenesis of a number of fungal infections. This study investigated melanin pigment production primarily in *Aspergillus fumigatus* and *Penicillium marneffei.* Treatment of conidia from *A. fumigatus* and *P. marneffei* with proteolytic enzymes, denaturant and hot concentrated acid yielded dark particles that were similar in size and shape to their original propagules. Electron spin resonance spectroscopy revealed that the conidia derived particles were stable free radicals consistent with an identification as melanin. Melanin particles extracted from *A*. *fumigatus* were used to immunize BALB/c mice in order to produce a total of 5 anti-melanin monoclonal antibodies (MAbs). The MAbs were strongly reactive against a wide spectrum of melanin types by ELISA and immunoflurescence. The novel MAbs were used to examine the temporal expression of melanin in *A. fumigatus* and *P*. *marneffei* during conidial germination *in vitro* and to detect the presence of melanization during infection. Additionally, sera from *P. marneffei*–infected mice contained anti-melanin IgG and IgM when compared with uninfected mice. SDS-PAGE L-3,4-dihydroxyphenylalanine (L-DOPA) substrate analysis confirmed the presence of laccase activities in both fungi. These finding indicated that *A. fumigatus* and *P. marneffei* can produce melanin or melanin-like compounds both *in vitro* and *in vivo*; melanin may play a role in the pathogenesis of these fungi.