Mitochondria: Different Adaptation to Grow Conditions with Possible Implications to Infectivity

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The main goal of this project is to answer the question: How mitochondria of Candida albicans adapt and modulate the fungi adaptation to sudden chances in growth conditions associated to the hospital infection? The intention is to analyze the adaptive response of Candida albicans mitochondria submitted concurrently to low oxygen tension and temperature increment and its relation to infectivity. The hypothesis is that the synergistic response to increased temperature and decreased oxygen tension should cause changes in the mitochondria of these organisms that may affect infectivity. Therefore, was proposed using confocal microscopy techniques to describe possible changes in morphology in different growth conditions in cultures grown for 12 weeks. The confocal microscopy data show that there are a greater number of mitochondria in anoxic conditions. Confocal microscopy of yeast growing in normoxia 37 °C and hypoxia 28 °C and 37 °C on YPG medium shows that mitochondria are expelled from the cells. After these observations tests with four antifungal, namely amphotericin B, fluorocytosine, caspofungin and voriconazole were performed. These findings may have important implications for studies on the epidemiology and infectivity of Candida spp. since recent publications show increasing involvement of mitochondria in modulating virulence and drug resistance in yeast.

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