**INTRODUCTION.** *Aspergillus fumigatus* is the most pathogenic species among the Aspergilli, and the major filamentous fungal agent of human pulmonary infection. The ADP-ribosylation factor (ARF) GTPase activating proteins (GAPs) are a family of multidomain proteins expressed in eukaryotes. The ARF-GAPs acts by regulating hydrolysis of GTP bound to ARF proteins. The ARF-GAPs, which have multiple functional domains, also affect the actin cytoskeleton and membranes by specific interactions with lipids and proteins. Sphingolipids are components of eukaryotic plasma membrane and have role in cellular growth regulation, cellular stress response and vesicular transport. The gene *age3* in *Candida albicans* encodes an ARF-GAP protein and its ortholog in *A. fumigatus, gcsA*, had been identified in this work.

**MATERIAL AND METHODS.** A *gcsA* null mutant in *A. fumigatus* was constructed and the sensibility profile to antifungi and drugs that affect the sphingolipids metabolism, vesicular transport, and cellular stress had been evaluated. Were tested Myriocin (serine palmitoyltransferase inhibitor), Cerulenin (fatty acid and steroid biosynthesis inhibitor), Farnesol (catabolic product in cholesterol biosynthesis and apoptosis promoter in fungi), Phytosphingosine (Sphingolipid member pathway), Brefeldin A (ARF-GTP inhibitor) and hidrogen peroxide (oxidative stress inductor). Furthermore, genes which encode enzymes of sphingolipids biosynthesis had their expression evaluated in the mutant by quantitative PCR.

**RESULTS AND DISCUSSION** *gcsA* null mutant has normal hyphal growth and conidiophores formation, and is not virulent in an IPA mouse model. The absence of *gcsA* gene shows no differences in sensitivity to several members of antifungal classes. However, *gcsA* null mutant has shown resistance to Myriocin, Cerulenin, Phytosphingosine and Farnesol. In addition, increased tolerance to Brefeldin A and hidrogen peroxide is shown. All these drugs have the common ability to induce apoptosis. **CONCLUSION.** These results indicates that the ARF-GAP *gcsA* gene in *A. fumigatus* has a role in sphingolipids metabolism, apoptosis and Reactive Oxigen Species (ROS) production.


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