

## **Inhibition of hyphae formation and SIR2 expression in *Candida albicans* treated with fresh *Allium sativum* (garlic) extract.**

### **ABSTRACT**

**Aims:** The aims of the present study were to determine whether *Allium sativum* (garlic) extract has any effect on the morphology transformation of *Candida albicans*, and to investigate whether it could alter the gene expression level of SIR2, a morphogenetic control gene and SAP4, a gene encoding secreted aspartyl proteinase. **Methods and Results:** *Candida albicans* cells were incubated with a range of concentrations of fresh garlic extract, and the morphology was monitored via light microscopy. Garlic extract treatment caused the transition of yeast form to hyphal form to be obviated. The expression of SIR2 was down-regulated from 1.2- to 2.5-fold with increasing concentration of the garlic extract, as determined from relative quantitative reverse transcription- polymerase chain reaction. There was no difference in the SAP4 expression in control vs treated cultures. **Conclusions:** Garlic and its bioactive components have the ability to suppress hyphae production and to affect the expression level of SIR2 gene. **Significance and Impact of the Study:** Hyphal production is an essential virulence determinant of *C. albicans* for invasive infections, therefore garlic and its constituents can be effective not only against colonizing *C. albicans* strains present in mucosal infections, but also virulent strains causing systemic or invasive candidiasis.

**Keyword:** *Allium sativum*; *Candida albicans*; SIR2 gene.