Study of Antibiofilm Activity of Allium sativum Extract Against C. albicans ATCC10231 Biofilm

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Background & Objectives: The pathogenesis of both superficial and systemic candidiasis is closely dictated by properties of the yeast biofilms. Biofilms are a protected niche for microorganisms where they are safe from antibiotic treatment and can create a source of infections. The aim of this study was the control and remove of candida biofilms with aqueous extract of *Allium sativum*.

Methods: In this study, aqueous extract of *Allium sativum* was prepared. Then, the concentration of extract was measured. After that, the minimum inhibitory concentration (MICs) of extract was determined according to CLSI protocol by serial microdilution methods and MFC of this natural product was calculated. At the end, antibiofilm effect of this extract was evaluated by MTT Methods.

Results: The extract of Allium sativum had significantly inhibitory effect against fungal specie, *C. albicans* ATCC1023. The amount of MIC50, MIC90 and MFC of this extract was 0.1, 0.4 and 0.9 µg/ml, respectively. The result has shown that this extract was able to inhibit 14.3%,39.1%,53.4% and 91.9% of biofilm structure in concentrations 250, 1000, 2000 and 4000 µg/ml, respectively.

Conclousion: The results have shown that aqueous extract of *Allium sativum* had potent antibiofilm effect and can be used to control the yeast biofilms in in vitro experiments. This natural extract may be one of the best choices to replace with synthetic drugs to control and treat of fungal infections. Further investigation should be carried out to find mechanisms of active fractions against yeast cells in in vivo tests.

Keywords: *Allium sativum*; *Candida albicans*; Biofilm