

ABSTRACT

The Role Of Enzymes Extract From *Achatina fulica* (snails) Digestive Fluids and Ligand Protein Bgl2 To Improve Fluconazole Performance In order to Eradicate The *Candida albicans* Biofilms *In Vitro*

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Biofilm formation is a major virulence possessed by *Candida albicans* and causes resistance to various antifungals include fluconazole. The research objectives were (1) to determine the effect of the addition of enzyme extract from *Achatina fulica* digestive fluids on the performance of fluconazole, (2) to determine the effect of kanamycin on the performance of fluconazole and (3) to determine the increasing of fluconazole performance in the presence of enzymes extract from *Achatina fulica* (snails) liquid digestive and kanamycin to eradicate *C. albicans in vitro*. Biofilm of *C. albicans* was grown on spider medium, then treated with antifungals. Antifungal activity was determined quantitatively by using its cell viability and SEM on biofilm *C. albicans*. Analysis of cell viability based on the ability of living cells to convert tetrazolium salt (XTT) into formazan. Based on the cell viability test, inhibition of biofilm growth in the presence of of the enzyme extract of digestive fluids *Achatina fulica* at 3 and 6 hours of incubation were 22.22% and 22.55%. Inhibition of biofilm growth with fluconazole treatment at 3 and 6 hours of incubation were 29.21% and 17.5%. Inhibition of biofilm growth with fluconazole treatment and kanamycin at 3 and 6 hours of incubation were 66.67% and 57.57%. Inhibition of biofilm growth with fluconazole treatment and extracts enzymes from *Achatina fulica* digestive fluid at 3 and 6 hours of incubation were 77.14% and 75.67%. Inhibition of biofilm growth with fluconazole treatment, kanamycin treatment, and extracts enzymes from *Achatina fulica* digestive fluid at 3 and 6 hours of incubation were 91.43% and 91.35%. SEM analyzed on the biofilm after treatment with kanamycin treatment, flukonazole treatment, and enzyme extracts from *Achatina fulica* digestive fluids, showed that almost all of the extracellular matrix *C. albicans* cells were hydrolyzed and almost all of the *C. albicans* cells were died. According to the result it can be concluded that the presence of kanamycin and enzyme extracts from *Achatina fulica* digestive fluids can improve the performance of fluconazole. The combination of kanamycin, an enzyme extract from *Achatina fulica* digestive fluids and fluconazole is the best combination in lowering barriers to the growth of the biofilm with the percentage of 91.43% which is the biggest obstacle.

Key words: *Candida albicans*, biofilm, fluconazole, enzyme ekstrak from *Achatina fulica* digestive fluids, a protein ligand Bgl2