

**Roziqin, A., 2013, Optimasi Kinerja Antifungi dalam Eradikasi Biofilm *Candida albicans* secara *In Vitro*, skripsi, dibawah bimbingan Prof. Dr. Afaf Baktir, MS dan Dr. Sri Sumarsih, M.Si, Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya**

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## ABSTRAK

*Candida albicans* adalah jamur dimorfik yang terdapat pada saluran pencernaan, saluran pernafasan, vagina, uretra, kulit, dan di bawah kuku jari tangan dan kaki. Apabila *Candida albicans* telah membentuk biofilm, maka *Candida albicans* akan resisten terhadap antifungi. Penelitian ini mempelajari peranan kanamycin, enzim  $\beta$ -1,3-glukanase dari *Achatina fulica*, enzim protease dari *Lumbricus rubellus* dalam meningkatkan kinerja fluconazole untuk eradikasi biofilm *Candida albicans*. Dalam penelitian ini dilakukan uji aktivitas enzim  $\beta$ -1,3-glukanase dan protease untuk menentukan pH optimum dan perbandingan jumlah ekstrak enzim. Berbagai perlakuan antifungi telah dilakukan. Penghambatan pertumbuhan *Candida albicans* diamati dengan spektrofotometer UV-Vis setelah dilakukan analisis viabilitas sel. Perlakuan paling efektif pada penelitian ini adalah dengan menggunakan fluconazole, kanamycin, ekstrak enzim *Achatina fulica* dan *Lumbricus rubellus* (2:1) pada pH 7. Prosentase penghambatan pada perlakuan efektif adalah sebesar 97,15% dan 97,21% dalam waktu inkubasi 3 jam dan 6 jam. Diduga adanya kanamycin, enzim  $\beta$ -1,3-glukanase, kitinase, dan protease menyebabkan peningkatan kinerja fluconazole dalam eradikasi biofilm *Candida albicans*.

**Kata kunci :** *Candida albicans*, biofilm, fluconazole, kanamycin, ekstrak enzim *Achatina fulica*, ekstrak enzim *Lumbricus rubellus*

**Roziqin, A., 2013, Optimization of Antifungal Performance in Eradication of *Candida albicans* Biofilms *In Vitro*, undergraduate thesis, under Guidance Prof. Dr. Afaf Baktir, MS and Dr. Sri Sumarsih, M.Si, Department of Chemistry, Science and Technology Faculty, Airlangga University, Surabaya**

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## ABSTRACT

*Candida albicans* is dimorphic fungal founding in the gastrointestinal tract, upper respiratory tract, vagina, urethra, skin, and under fingernail of hand and foot. If *Candida albicans* has formed biofilm, so *Candida albicans* will be resistant to antifungal. This research studied the role of kanamycin,  $\beta$ -1,3-glucanase enzyme from *Achatina fulica* and protease enzyme from *Lumbricus rubellus* in improving the performance of fluconazole for *Candida albicans* biofilm eradication. In this research tested the activity of the enzyme  $\beta$ -1,3-glucanase and protease to determine the optimum pH and the ratio of the amount of enzyme extract. Various antifungal treatment has been carried out. Inhibition of *Candida albicans* growth was observed with spectrophotometer UV-Vis after viability cell analysis is done. The most effective treatment in this study is the use of fluconazole, kanamycin, *Achatina fulica* enzyme extract and *Lumbricus rubellus* enzyme extract (2:1) at pH 7. Percentage of inhibition at effective treatment is 97.15% and 97.21% in the incubation time of 3 hours and 6 hours. It was presumed that presence of kanamycin, the enzyme  $\beta$ -1,3-glucanase, chitinase, and protease thus improving fluconazole in *Candida albicans* biofilm eradication.

**Key words :** *Candida albicans*, biofilm, fluconazole, kanamycin, *Achatina fulica* enzyme extract, *Lumbricus rubellus* enzyme extract