

# Mekanisme Penghambatan Metabolit *Pseudomonas azotoformans* UICC B-91 terhadap Aktivitas Fungi Patogen = Inhibition Mechanism of *Pseudomonas azotoformans* UICC B-91 Metabolites Towards the Activity of Pathogenic Fungi

Yonita Aprilia Putri, author

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## Abstrak

Penyakit infeksi fungi merupakan penyakit yang sering ditemukan di Indonesia. Pencarian antibiotik yang tepat untuk penyakit infeksi fungi masih terus dilakukan. *Pseudomonas azotoformans* UICC B-91 berpotensi sebagai antimikroba. Tujuan penelitian untuk mengetahui mekanisme penghambatan metabolit *P. azotoformans* UICC B-91 dari medium terhadap fungi patogen secara morfologi. Hasil penelitian menunjukkan senyawa metabolit *P. azotoformans* UICC B-91 mampu menghambat *C. albicans* ATCC 10231 dan *T. mentagrophytes*. Zona inhibisi larutan medium *P. azotoformans* UICC B-91 terhadap *C. albicans* ATCC 10231 konsentrasi 100 mg/mL dan 80 mg/mL memiliki daya hambat kuat, konsentrasi 60 mg/mL memiliki daya hambat sedang. Zona inhibisi terhadap *T. mentagrophytes* konsentrasi 100 mg/mL dan 80 mg/mL memiliki daya hambat kuat, konsentrasi 60 mg/mL memiliki daya hambat sedang.

Pengamatan mikroskopis *C. albicans* ATCC 10231 setelah penambahan medium *P. azotoformans* UICC B-91 di bawah Scanning Electron Microscope (SEM) mengalami perubahan permukaan sel yeast menjadi tidak rata. Pengamatan mikroskopis *T. mentagrophytes* setelah penambahan medium *P. azotoformans* UICC B-91 mengalami konstiksi mikrokonidia. Mekanisme penghambatan metabolit dari medium *P. azotoformans* UICC B-91 terhadap *C. albicans* ATCC 10231 diduga melalui difusi yang mengganggu fungsi membran sel atau menghambat transisi bentuk yeast ke bentuk hifa, sedangkan terhadap *T. mentagrophytes* diduga mengganggu dinding sel dan mengganggu fungsi membran sel.

.....Fungal infection is a disease that is often found in Indonesia. The search for appropriate antibiotics for fungal infections is still ongoing. *Pseudomonas azotoformans* UICC B-91 has potential as an antimicrobial. The purpose of this study was to determine the mechanism of inhibition of the metabolite of *P. azotoformans* UICC B-91 from the medium against morphologically pathogenic fungi. The results showed that the metabolite compound *P. azotoformans* UICC B-91 was able to inhibit *C. albicans* ATCC 10231 and *T. mentagrophytes*. Inhibition zone of medium solution of *P. azotoformans* UICC B-91 against *C. albicans* ATCC 10231 with a concentration of 100 mg/mL and 80 mg/mL had a strong inhibitory effect, a concentration of 60 mg/mL had a moderate inhibitory effect. The zone of inhibition for *T. mentagrophytes* at concentrations of 100 mg/mL and 80 mg/mL had a strong inhibitory effect, a concentration of 60 mg/mL had moderate inhibition. Microscopic observation of *C. albicans* ATCC 10231 after the addition of *P. azotoformans* UICC B-91 medium under a Scanning Electron Microscope (SEM) changed the yeast cell surface to become uneven. Microscopic observation of *T. mentagrophytes* after the addition of *P. azotoformans* UICC B-91 medium experienced constriction of microconidia. The mechanism of inhibition of metabolites from *P. azotoformans* UICC B-91 medium against *C. albicans* ATCC 10231 is thought to be through diffusion which disrupts cell membrane function or inhibits the transition from yeast to hyphal form, while against *T. mentagrophytes* it is thought to disrupt cell walls and disrupt cell membrane function.

