Produksi antifungi dari bacillus siamensis LDR terhadap aspergillus niger ABP dan ART menggunakan sumber karbon pati beras = Antifungal production dari bacillus siamensis LDR against aspergillus niger ABP and ART using rice starch as carbon source

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Abstrak

Berbagai masalah muncul dalam makanan dan produk pertanian yang tercemar dengan cetakan Aspergillus niger. Pertumbuhan A. niger dapat dikelola dengan metode biokontrol menggunakan senyawa antijamur yang dihasilkan melalui proses fermentasi. Komposisi nutrisi merupakan faktor penting dalam proses fermentasi. Penelitian telah dilakukan terhadap produksi senyawa antijamur dari Bacillus siamensis LDR melawan dua galur A. niger ABP dan ART. Modifikasi media Czapek-Dox dengan Sumber karbon pati beras, sukrosa dan ekstrak ragi digunakan sebagai sumber karbon media fermentasi. Fermentasi dilakukan selama 10, 12, dan 14 hari dengan metode diam budaya. Uji antibiotik dilakukan dengan menggunakan filtrat fermentasi sebagai pelarut internal PDB dan PDA sedang. Hasil pengujian diukur berdasarkan biomassa pada medium cair PDB, dan diameter pertumbuhan dalam media padat PDA dari A. niger ABP dan ART. Uji Filtrat pertumbuhan antibiosis B. siamensis LDR terhadap A. niger menunjukkan ABP efektivitas tertinggi pada hari ke-10 fermentasi dengan penurunan biomassa hingga 99,20% dan penghambatan pertumbuhan diameter mencapai 83,25%. Efektivitas tertinggi terhadap A. niger ART pada hari ke-12 fermentasi dengan penurunan biomassa hingga 89,62% dan diameter penghambatan pertumbuhan mencapai 87,95%. Tes antibiotik juga dilakukan dengan metode difusi ekstrak kasar senyawa antijamur dari media fermentasi pada hari ke 12. Media diekstraksi dengan metode ekstraksi cair-cair menggunakan etil asetat. Uji antibiotik dengan ekstrak kasar dilakukan pada konsentrasi 2.500, 5.000, 10.000, dan 20.000 ppm. Secara kualitatif, ekstrak kasar bersifat antijamur menunjukkan penghambatan pertumbuhan terhadap A. niger ABP dan HAART pada konsentrasi 2.500 ppm.

.....Problems arose in food and agricultural products tainted with Aspergillus niger molds. A. niger growth can be managed by biocontrol methods using antifungal compounds produced through the fermentation process. The nutritional composition is an important factor in the fermentation process. Research has been conducted on the production of an antifungal compound from Bacillus siamensis LDR against two A. niger ABP strains and ART. Modification of Czapek-Dox media with carbon sources of rice starch, sucrose and yeast extract were used as carbon sources in the fermentation medium. Fermentation was carried out for 10, 12, and 14 days with culture still method. Antibiotic test was carried out using fermentation filtrate as internal solvent of medium PDB and PDA. The test results were measured based on biomass in PDB liquid medium, and growth diameter in PDA solid media from A. niger ABP and ART. Test The antibiosis growth filtrate of B. siamensis LDR against A. niger showed the highest ABP effectiveness on the 10th day of fermentation with a decrease in biomass up to 99.20% and inhibition of diameter growth reaching 83.25%. Highest effectiveness against A. niger ART on the 12th day of fermentation with a decrease in biomass up to 89.62% and the diameter of growth inhibition reaching 87.95%. Antibiotic tests were also carried out by diffusion method of crude extract of antifungal compounds from the fermentation medium on day 12. The media was extracted by the liquid-liquid extraction method using ethyl acetate. Antibiotic assays with crude

extracts were carried out at concentrations of 2,500, 5,000, 10,000, and 20,000 ppm. Qualitatively, the crude extract was antifungal and showed growth inhibition against A. niger ABP and HAART at a concentration of 2,500 ppm.