

Profil Metabolit Beberapa Isolat Kapang Pelapuk Putih Dari Kayu Lapuk di Hutan Universitas Indonesia, Depok = Metabolite Profile of Several White Rot Fungi Isolates From Decaying Wood in the University of Indonesia Forest, Depok

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Abstrak

Dengan meningkatnya permintaan global terhadap vanilin terutama dibutuhkan aplikasi dan metode produksi lain yang perlu dikembangkan. Lignin menjadi pilihan alternatif dalam sintesis vanilin melalui proses degradasi dengan bantuan enzim ligninolitik yang dihasilkan kapang pelapuk putih *Trametes versicolor*. Penelitian ini dilakukan untuk menganalisis profil metabolit hasil degradasi lignin dengan enzim ligninolitik dan menilai pengaruh penambahan enzim selulolitik dari ekstrak hepatopankreas bekicot (*Achatina fulica*). Isolat kapang pelapuk putih diisolasi dari kayu lapuk di hutan Universitas Indonesia, menghasilkan isolat potensial dengan ciri homogen dan miselium putih tebal. Enzim selulolitik diekstraksi dari hepatopankreas bekicot melalui proses homogenisasi dan sentrifugasi. Prekultur dilakukan dalam medium SDB di erlenmeyer, dilanjutkan dengan fermentasi bersama substrat lignoselulosa dari tandan kosong kelapa sawit selama 4 hari pada suhu ruang dan kecepatan 100 rpm. Analisis profil metabolit menggunakan Kromatografi Cair Kinerja Tinggi (KCKT) dengan kolom C18, fase gerak metanol-asam asetat 0,2% (40:60), panjang gelombang 280 nm dan laju alir 1,0 ml/menit menunjukkan isolat kapang menghasilkan vanilin dengan waktu retensi 8,2 menit. Isolat H6-(1) menunjukkan puncak vanilin tertinggi dari enzim ligninolitik, sedangkan penambahan enzim selulolitik pada isolat A7-(1) meningkatkan puncak vanilin.

.....With the increasing global demand for vanillin, the development, other applications and production methods need to be developed. Lignin is an alternative choice in vanillin synthesis through a degradation process with the help of ligninolytic enzymes produced by the white rot fungi *Trametes versicolor*. This study was conducted to analyze the metabolite profile resulting from lignin degradation with ligninolytic enzymes and the effect of adding cellulolytic enzymes from snail (*Achatina fulica*) hepatopancreas extract. White rot fungi isolates were isolated from decaying wood in the University of Indonesia forest, producing potential isolates with homogeneous characteristics and thick white mycelium. Cellulolytic enzymes were extracted from snail hepatopancreas through homogenization and centrifugation processes. Pre-culture was carried out in SDB medium in an erlenmeyer, followed by fermentation with lignocellulosic substrate from empty oil palm fruit bunch for 4 days at room temperature and a speed of 100 rpm. Metabolite profile analysis using High Performance Liquid Chromatography (HPLC) with a C18 column, mobile phase methanol-acetic acid 0,2% (40:60), 280 nm wavelength and 1,0 ml/minute flow rate showed that the white-rot fungi isolate produced vanillin with retention time 8,2 minutes. Isolate H6-(1) showed the highest vanillin peak from ligninolytic enzymes, while the addition of cellulolytic enzymes to isolate A7-(1) increased the vanillin peak