Pengaruh variasi konsentrasi amonium nitrat terhadap kemampuan aspergillus flavus UICC 360 dalam menghasilkan lovastatin = The effect of variation in ammonium nitrate concentration on the ability of aspergillus flavus UICC 360 to produce lovastatin / Sartika Devi Pratiwi

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Abstrak

ABSTRAK
Aspergillus flavus UICC 360 telah diketahui mampu menghasilkan lovastatin pada fermentasi menggunakan sumber nitrogen NaNO3. Penelitian bertujuan untuk mengetahui pengaruh variasi konsentrasi NH4NO3 terhadap kemampuan kapang tersebut dalam menghasilkan lovastatin. Fermentasi menggunakan medium Czapek’s Dox Broth modifikasi dengan variasi konsentrasi NH4NO3 (0 mM; 25,00 mM; 31,25 mM; 37,50 mM; 43,75 mM; dan 50,00 mM). Aspergillus flavus UICC 360 dengan konsentrasi inokulum sebesar 1,96% (v/v) diinokulasikan ke dalam medium, kemudian diagitasi 90 rpm, pada suhu ruang (27o--30oC) selama 7 hari untuk mendapatkan ekstrak hasil fermentasi. Pengujian ekstrak lovastatin di dalam etil asetat dilakukan terhadap Candida albicans UICC Y-29 dengan metode difusi agar cara cakram. Ekstrak hasil fermentasi dengan perlakuan 37,50 mM NH4NO3 menunjukkan indeks penghambatan tertinggi, yaitu sebesar 0,84 ± 0,07. Hasil Kromatografi Lapis Tipis (KLT) ekstrak hasil fermentasi perlakuan 25,00 mM NH4NO3 dan 37,50 mM NH4NO3 memiliki Rf (0,45), perlakuan 31,25 mM NH4NO3 dan 43,75 mM NH4NO3 memiliki Rf (0,47), sedangkan nilai Rf perlakuan 50 mM NH4NO3 (0,48). Nilai Rf ekstrak hasil fermentasi tersebut hampir sama dengan Rf lovastatin standar, yaitu (0,46), sehingga mengindikasikan adanya senyawa lovastatin di dalam ekstrak. Hasil uji perbandingan berganda Least Significant Differences (LSD) (P < 0,05) menunjukkan adanya pengaruh nyata pemberian variasi konsentrasi NH4NO3 terhadap kemampuan A. flavus UICC 360 dalam menghasilkan lovastatin.
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ABSTRACT
Aspergillus flavus UICC 360 has been reported to produce lovastatin in fermentation by using nitrogen source such as NaNO3. The research aims to determine the effect of variations of NH4NO3 concentration on the ability of A. flavus UICC 360 to produce lovastatin. Fermentation was carried out by using Czapek's Dox Broth modified with variations of NH4NO3 concentration (0 mM; 25.00 mM; 31.25 mM; 37.50 mM; 43.75 mM; and 50.00 mM). Aspergillus flavus UICC 360 with inoculum concentration of 1.96% (v/v) was inoculated into the medium and then agitated 90 rpm, at room temperature (27o--30oC) for 7 days to obtain the fermentation extract. Extract in ethyl acetate was tested with a disc

diffusion method against Candida albicans UICC Y-29. The extract from the fermentation using 37.50 mM NH_4NO_3 showed the highest inhibition index 0.84 ± 0.07. The results of Thin Layer Chromatography (TLC) of extract from the fermentation of using 25.00 mM NH_4NO_3 and 37.50 mM NH_4NO_3 have Rf (0.45), 31.25 mM NH_4NO_3 and 43.75 mM NH_4NO_3 have Rf (0.47), and 50 mM NH_4NO_3 have Rf (0.48). The Rf value of extracts have nearly similiar with a lovastatin standard 0.46 which indicated there was lovastatin in the extract. The results of Least Significant Differences (LSD) ($P < 0.05$) showed there was a significant effect of NH_4NO_3 concentration variation in the ability of A. flavus UICC 360 to produce lovastatin.