Karakterisasi produk gen sintetik lipase thermomyces lanuginosus yang diekspresikan oleh Bacillus subtilis DB104 rekombinan yang mengandung pSKE194-lip = Characterization of synthetic thermomyces lanuginosus lipase gene product expressed by recombinant Bacillus subtilis DB104 carrying pSKE194-lip plasmid

Haniyya, author

Abstrak

Penelitian karakterisasi produk gen sintetik lipase Thermomyces lanuginosus yang diekspresikan oleh Bacillus subtilis DB104 rekombinan K7 bertujuan untuk mengetahui pengaruh suhu, pH, dan ion logam terhadap aktivitas lipase. Bacillus subtilis DB104 promXynAQ1 non rekombinan digunakan sebagai kontrol. Lipase rekombinan optimal diproduksi pada media LB yang mengandung substrat minyak zaitun 1% selama 24 jam. Aktivitas lipase rekombinan diuji pada berbagai variasi perlakuan suhu (40°C--80°C), pH (5--10), dan penambahan ion logam menggunakan metode uji aktivitas spektrofotometri p-nitrofenil palmitat (pNPP assay). Data aktivitas spesifik lipase rekombinan dianalisis menggunakan data standar deviasi. Hasil penelitian menunjukkan bahwa lipase rekombinan aktif maksimal pada suhu 80°C dan optimal pH 8 dengan aktivitas spesifik sebesar 1,488 U/mg. Penambahan ion logam Ca2+, Mg2+, Cu2+, dan senyawa pengelat EDTA berpengaruh menghambat aktivitas enzim lipase rekombinan.

.....The research of characterization of lipase Thermomyces lanuginosus synthetic gene product expressed by recombinant Bacillus subtilis DB104 had been conducted to investigate the effects of temperature, pH, and metal ions toward the enzymatic activity. Non recombinant lipase of Bacillus subtilis DB104 promXynAQ1 was used as control. Recombinant lipase was optimally produced using LB media containing 1% olive oil during 24 hours incubation time. Recombinant lipase was assayed in various treatments of temperature (40°C--80°C), pH (5--10), and metal ion addition using spectrophotometric method of p-nitrophenyl palmitate assay (pNPP assay). Specific activity of recombinant lipase data were analyzed with deviation standard. Experiment results showed that activity of recombinant lipase is maximum at temperature 80°C and optimum at pH 8 in the amount of 1,488 U/mg. The presence of metal cations Ca2+, Mg2+, Cu2+, and chelating-agent EDTA gave an inhibitory effect on recombinant lipase activity.