

Documents

Mohamed, S.A.^{a,b}, Abdel-Aty, A.M.^b, Hamed, M.B.^b, El-Badry, M.O.^b, Fahmy, A.S.^b

Ficus sycomorus latex: A thermostable peroxidase

(2011) *African Journal of Biotechnology*, 10 (76), pp. 17532-17545.

^a Biochemistry Department, Faculty of Science, King Abdulaziz University, Jeddah 21589, Saudi Arabia

^b Molecular Biology Department, National Research Centre, Dokki, Cairo, Egypt

Abstract

Peroxidase from sycamore fig *Ficus sycomorus* latex (POLI) was purified by heat treatment, anion exchange chromatography and molecular exclusion chromatography. The purity was determined from high specific activity (9166 units/mg protein), purification fold (28), RZ value 3.1 and a single band in native polyacrylamide gel electrophoresis (PAGE), sodium dodecyl sulfate (SDS)-PAGE and visualized peroxidase activity on the PAGE. POLI had molecular mass of 43 kDa. Substrates commonly used in immunodiagnostic kits as 2,2-azino-bis [3-ethyl-benzothiazoline-(6)-sulfonic acid] (ABTS), 4-chloro-1-naphthol (4C-1N), o-phenylenediamine (OPD) and 3,3',5,5'-tetramethylbenzidine (TMB) were found to be the best substrates for the enzyme. The K_m for catalysis of H_2O_2 was 1.2 mM. The catalytic efficiency (V_{max}/K_m) for POLI was found to follow the order: ABTS, 4C-1N, OPD, TMB, guaiacol, p-aminopyridine, o-dianisidine and pyrogallol. The enzyme showed a broad pH optimum ranged from pH 5.5 to 7.0. The optimal temperature for the enzyme was 35 to 40°C. POLI showed highest thermal stability. No loss of enzyme activity was recorded up to 60°C, whereas only 20% of enzyme activity was lost at 70 to 90°C. The thermal inactivation profiles of POLI demonstrated that the enzyme had higher thermal resistance. The peroxidase activity was slightly enhanced by low concentration of Ca^{2+} , Ni^{2+} and Mg^{2+} and high concentration of Mn^{2+} , Fe^{3+} , Zn^{2+} , Hg^{2+} caused slightly inhibitory effects. In conclusion, sycamore fig latex will be a new and potential source for a peroxidase enzyme. © 2011 Academic Journals.

Author Keywords

Characterization; *Ficus sycomorus*; Latex; Peroxidase; Purification

Document Type: Article

Source: Scopus

About Scopus

[What is Scopus](#)
[Content coverage](#)
[What do users think](#)
[Latest](#)
[Tutorials](#)

Contact and Support

[Contact and support](#)
[Live Chat](#)

About Elsevier

[About Elsevier](#)
[About SciVerse](#)
[About SciVal](#)
[Terms and Conditions](#)
[Privacy Policy](#)



ELSEVIER