Abstract:

Litchi polyphenol oxidase (PPO) was extracted and purified by fractionation of solid ammonium sulfate and chromatographs of Sephadex G-100, Q-Sepharose, Phenyl Sepharose. Pyrogallol, catechol, and 4-methylcatechol were good substrates for the enzyme. No activity was detected with chlorogenic acid, p-cresol, resorcinol, hydroquinoine or tyrosine. The optimum pH for PPO activity was 6.8 with 4-methylcatechol. The enzyme was relatively temperature stable with maximum activity at 65°C, requiring about 9 min at 85°C for 50 % activity loss. Chemical modification by N-acetylimidazole, N-bromosuccinimide, p-nitrobenzenesulfonyl fluoride, 2,2′-dinitro-5,5′-dithiodibenzoic acid, iodoacetamide, and diethylpyrocarbonate showed that histidyl residues, tryptophyl residues, and thiol groups, but not tyrosyl residues and lysyl residues, were essential for PPO catalytic activity. In addition, litchi PPO was rich in Gly, Asp, and Gln amino acid composition.