

Abstract

Chestnuts of *Castanea henryi* (Skan) Rehd. et Wils were stored at 4 and -20 °C for a duration of 6 months. The effects of such storage treatments on the polyphenol oxidase (PPO) activity and total free phenolics content were investigated. Total phenolics content showed uneven distribution in *C. henryi* chestnuts. The chestnut PPO was isolated and characterized in terms of optimum temperature (40 °C), optimum pH (5.0), substrate specificity (catechol most efficient) and relative molecular weight (69.0 kDa). The PPO specific activity decreased from ca. 1180 to 340 U mg^{-1} for chestnuts stored at 4 °C and to ca. 300 U mg^{-1} for those stored at -20 °C. The PPO activity and the storage temperatures in this investigation showed a significant ($P < 0.05$) correlation. Moreover, the total phenolics content in both embryonic bud and endosperm decreased more during storage at -20 °C than at 4 °C. We therefore found a statistically significant correlation ($P < 0.05$) between the phenolics content and the PPO activity in chestnuts stored at these temperatures.