Title Influence of pH and temperature on peroxidase activity of litchi (*Litchi chinensis* Sonn.) Pericarp

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Abstract

The red color of the pericarp of litchi fruits is lost rapidly once harvested, which results in dark fruits, usually rejected by the consumers. The loss of color is due to degradation of anthocyanins, which is related to increase on peroxidase activity. Reducing the peroxidase action may result in the maintenance of the red color, improving the fruit shelf life. This work had the goal to evaluate the influence of pH and temperature on peroxidase activity of a partial purified preparation of pericarp, from litchi cv. Brewster fruits harvested at full red-mature stage. Peroxidase was partially purified by sequential saturation with ammonium sulfate. At 60–70% ammonium sulfate saturation, the activity of peroxidase was near 158 times higher compared to the crude extract. The enzyme showed optimum activity at pH 6.5 and no activity was detected at pH 2.5 and 9.5. Pre-incubation of the enzyme extract up to 45 minutes at pH 2.5 or 9.5 caused continuous reduction on peroxidase activity, with higher degree of efficiency at pH 2.5. The maximum activity of peroxidase was at 70°C, remaining active for a period of 120 minutes at 70 and 80°C. The enzyme was inactivated completely when heated for ten minutes at 90°C or for one minute at 100°C. The data suggest that, due to high temperature for the inactivation of peroxidase, activity may be reduced by treating the fruits with acid or alkaline solutions.