

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

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Abstract

Once harvested, the red color of litchi fruit pericarp is lost rapidly, which results in discoloration and browning throughout storage and commercialization. The loss of the red color is due to degradation of anthocyanins or lost of their stability. The polyphenoloxidase action is usually related to browning and discoloration of several fruits. This work had the goal to evaluate the influence of pH and temperature on polyphenoloxidase activity in a partial purified preparation of pericarp from litchi cv. Brewster fruits harvested at full red-mature stage. Polyphenoloxidase was partially purified by sequential saturation up to 80% ammonium sulfate. At concentrations of 40-50% ammonium sulfate, the activity of polyphenoloxidase was 124 times higher to that found in the crude extract. The enzyme showed optimum activity between the pH 6.5 and 7.0 and no activity was detected either at pH 2.5 or 9.5. Pre-incubation of the enzyme extract up to 35 minutes, at pH 2.5 or 9.5, completely inactivate the enzyme, being the acid pH more effective in reducing the action. The activity of polyphenoloxidase increased from 10 to 20°C, followed by continuous decrease at higher temperatures. The enzyme was inactivated completely when heated for 10 minutes at 60°C. The data suggest that polyphenoloxidase can be more easily inactivated by heat or acid treatment.