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Research article

ENZYMATIC CAROTENOID CLEAVAGE IN YELLOW PASSION FRUIT (*Passiflora flavicarpa*) POMACE

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Abstract

Carotenoid Cleavage Dioxygenase (CCD) is a type of enzyme that plays a role in forming flavor compounds from natural carotenoid sources, such as yellow passion fruit. The study aims to describe the partial purification of CCD enzymes from yellow passion fruit pomace and to identify the optimum pH and temperature performance of CCD enzymes, carotenoid compounds, and volatile compounds in yellow passion fruit pomace. The enzyme was partially purified using centrifugation, 80% ammonium sulfate precipitation, dialysis with a membrane cutoff of 12 kDa, and Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis. The relative activity of CCD enzymes on dialysis was 31.94%, showing that there was CCD enzyme activity that can oxidize the β-carotene substrate. The optimum temperature of CCD enzymes was 60 °C, while the optimum pH value was 7. The analysis of carotenoids using HPLC-PDA showed that yellow passion fruit pomace contains β-carotene, neoxanthin, ζ-carotene, and luteinepoxide. The dominant protein produced by dialysis had a molecular weight of 40 kDa. There were 19 volatile compounds identified in the yellow passion fruit pomace. The activity of CCD enzymes from yellow passion fruit pomace using carotenoid substrate can be used as a biocatalyst in the natural flavor industry