

Title Multiple forms of polygalacturonase from mango (*Mangifera indica* L. cv Alphonso) fruit
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Abstract

Polygalacturonase (PG) from mango pulp revealed three isoforms (I, II, III) upon ion exchange and gel filtration chromatography, each having an abundance of 68%, 6% and 26%, and molecular weights (M_r) 40, 51 and 45 kDa, respectively. The pH optimum for the isoforms was between 3 and 4. PG-I was stable over a wide pH range (4–7.5) unlike PG II and III, which were stable at pH 4 and 5, respectively. The optimum temperature was around 40 °C for all the three isoforms. Their apparent K_m for pectic acid was in the range 0.22–0.25 mg ml⁻¹. The V_{max} for PG I, II and III was 5.7, 3.6 and 4.4 μ mol GalA equivalent h⁻¹, respectively. Cd²⁺, Cu²⁺ and Fe²⁺ and EDTA inhibited whereas GalA, Gal, Fuc, Rha and Ara stimulated PG-I activity, in particular. The major endogenous substrates for mango PG were identified to be two rhamnogalacturonans varying in their sugar ratio. These results are discussed in the light of pectin dissolution in vivo in ripening mango.

Abbreviations: PG, polygalacturonase; IEC, ion exchange chromatography; DEAE, diethylaminoethyl; GPC, gel permeation chromatography; M_r , molecular weight; kDa, kilo daltons; PGA, polygalacturonic acid; GalA, galacturonic acid; Gal, galactose; Glc, glucose; Man, mannose; Fuc, fucose; Rha, rhamnose; Ara, arabinose; Xyl, xylose; EDTA, ethylenediaminetetraacetate; SDS–PAGE, sodium dodecyl sulfate–polyacrylamide gel electrophoresis; PVP, polyvinyl pyrrolidone; PMSF, phenylmethylsulfonylfluoride; rpm, revolutions per minute