

Title Activities of beta-hexosaminidase and alpha-mannosidase during development and ripening of bell capsicum (*Capsicum annuum* var. *variata*)

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Abstract

β -Hexosaminidase (EC 3.2.1.52) and α -mannosidase (EC 3.2.1.24) are glycosidases that are presumed to play a major role in fruit softening during ripening. The present investigation specifically examined the inter-relationship between these two glycosidases in the context of fruit ripening, and hence their activities, isoform profile, glycoprotein profile, etc. are looked into at various stages of development and ripening of bell capsicum. The activity of β -hexosaminidase in bell capsicum (*Capsicum annuum* var. *variata*) increased slightly during fruit development, while it increased significantly during the ripening phase. On the other hand, α -mannosidase activity was prominent during fruit development compared to its activity during ripening. Enzyme activity of β -hexosaminidase was found to be always higher than that of α -mannosidase in this fruit. The ripe fruit showed the highest activity of β -hexosaminidase among different parts of bell capsicum plant. Highest activity of α -mannosidase was seen in the shoot tip followed by flower, leaf stalk and ripe fruit. Protein profile of the bell capsicum fruit during development stage was distinctly different from that of ripening phase. Some of the ripening specific proteins appeared to be glycoproteins. Further, carbohydrate:protein ratio in the aqueous extracts of acetone-dried powders of bell capsicum fruit at different stages of fruit development and ripening was highest at climacteric. These observations suggested ripening specificity for β -hexosaminidase enzyme. All these data suggested the presence of an inter-relationship between the two enzyme activities that would lend support to the novel implication of these two glycosidases in the textural softening associated with fruit ripening.