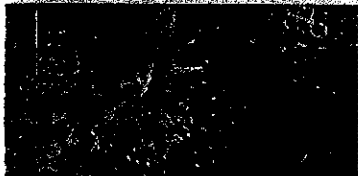




# Nutritionists meet Food Scientists and Technologists

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ABSTRACT BOOK



EFFOST



## CHARACTERIZATION OF POLYPHENOLOXIDASE EXTRACTED FROM 'JONAGORED' APPLE

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Browning in apple flesh is mainly initiated by the action of polyphenoloxidase (PPO) on simple phenols, converting them, in the presence of oxygen, to *o*-quinones. These subsequently polymerize by non-enzymatic reactions to form brown melanin pigments, which are partially stabilized by linkage with proteins.

Polyphenoloxidase activity has been extensively reported, by several authors, to be the main factor involved in apple browning. The effect of different varieties on enzyme activity and susceptibility to browning is a well known phenomenon. Although PPO has been investigated for many apple varieties, 'Jonagored' has not yet been reported. The characterization of the specific enzyme is necessary for a better understanding of the browning mechanism under specific storage conditions or if a more effective means of controlling the enzymatic browning is required. Such information is important for the postharvest handling of 'Jonagored' and, in particular, for minimal processing operations.

With the objective of subsequently controlling enzymatic browning mediated by PPO of this specific apple variety 'Jonagored', work was carried out to characterize the enzyme involved. Experiments were performed in order to optimize the extraction conditions of PPO (best ratio of volume of extraction buffer / mass of fruit tissue, best PVP concentration, best pH of extraction) and to evaluate the affinity and specificity of the enzyme toward several substrates.

Polyphenoloxidase was extracted from apple (cv. Jonagored) with addition of 2% PVP and 0.25% Triton X<sub>100</sub> to the extraction buffer containing phenolic adsorbents. 'Jonagored' PPO was found to have higher specificity (lower  $K_m$ ) towards L-DOPA, 4-methylcatechol and (+) catechin than other phenols tested. The ratio  $V_{max} / K_m$  indicates that *p*-cresol followed by L-DOPA and 4-methylcatechol are the best substrates for 'Jonagored' PPO.

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