Title Effect of whey protein concentrate on phenolic profile and browning of fresh-cut lettuce (*Lactuca sativa*)

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Abstract

The *in vitro* kinetics of lettuce PPO with respect to dissolved oxygen using catechin, chlorogenic acid, caffeic acid and gallic acid has been examined. *In-vitro* lettuce polyphenol oxidase (PPO) activity was determined by measuring the consumption of oxygen during the oxidation reaction. The effect of whey protein concentrate (WPC) was tested on the inhibition of lettuce PPO comparing with ascorbic acid (AA) and cysteine. A competitive model that considered inhibitors was the most appropriate model to explain reaction kinetics. Browning of lettuce was also monitored during storage for 24 h. Addition of WPC prevented loss of lightness in lettuce. Loss of identified phenolic compounds in lettuce was measured during the enzymatic browning process by high-performance liquid chromatography. Degradation of identified phenolic compounds followed first order kinetics during storage. Combination of WPC with cysteine was proposed for the protection of phenolics compounds against PPO-catalysed oxidation.