

Abstract

The effect of antioxidant type and content alone or in combination with edible coatings for fresh-cut apples was studied. Edible composite coatings were prepared from whey protein concentrate (WPC) and beeswax (BW). Ascorbic acid (AA) at 0.5% and 1% content, cysteine (Cys) at 0.1%, 0.3% and 0.5% content, and 4-hexylresorcinol (4-hexyl) at 0.005% and 0.02% were incorporated in the formulations as antioxidants. Apple pieces were coated with the emulsion coatings and weight loss, color (CIE L*, a*, b*, and browning index (BI)) and sensory evaluation were measured during storage. Results showed that incorporation of the antioxidant to the coating reduced browning compared to the use of the antioxidant alone. 4-Hexyl was the least effective at reducing browning, even when incorporated into the WPC-based coating. Increasing AA and Cys content decreased browning of coated samples. The most effective treatments were WPC–BW-based coatings with 1% AA or 0.5% Cys. Apple pieces treated with 0.3% and 0.1% Cys aqueous solutions showed a pinkish-red appearance, whereas this effect was not shown when similar levels of Cys were incorporated into the WPC–BW-based coating. Coating application did not reduce weight loss in fresh-cut apples, probably due to the high relative humidity of the product. A sensory panel was able to discriminate between samples coated with WPC–Cys and samples dipped in Cys aqueous solution, but not between samples coated with WPC–AA and samples dipped in AA aqueous solution.