

**Title** Effect of packaging and antibrowning agents on polyphenoloxidase activity of 'Granny Smith' minimally processed

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### Abstract

The effect of three types of bags and the use of antibrowning solutions on the polyphenoloxidase activity (PPO), color and sensory evaluation of apple wedges stored 10 days at 5 °C was evaluated. The treatments were without antibrowning solution (W A) + perforated bag (PB), which was used as control; W A + BLP (bag low permeability), WA+BHP (bag high permeability), AA (ascorbic acid) + EDTA (ethylenediaminetetraacetic acid) + BP; EDT A+AA+BLP and AA+EDT A+BHP. The PPO activity showed differences among treatments on day 1. These differences were due to the gas internal concentration in the package and the use of antibrowning solution. BHP (12 to 15% O<sub>2</sub> + 1.4 to 1.7% CO<sub>2</sub>) and/or AA+EDTA reported the lowest PPO activity. In addition, AA+EDTA+BHP treatment showed a lower protein content (0.16 Umg protein-I) compared to WA+BLP (0.29 Umg protein-I). On day 10 of storage, EDTA+AA+PB had only 0.18 Umg protein-I, compared to WA+BHP, which had the highest enzyme activity (0.41 Umg protein I). Wedges treated with 0.4% AA+0.5% EDT A increased their L and a\* values, and decreased C\*, indicating a further browning delay. On the other hand, PB with an internal atmosphere concentration approx. to air (21 % O<sub>2</sub> + 0% CO<sub>2</sub>) significantly delayed browning, while any internal atmosphere concentration either in BHP (12 to 15% O<sub>2</sub> and 1.4 to 1.7% CO<sub>2</sub>) or in BLP bags (8 to 10% O<sub>2</sub> and 2.5 to 3.2% CO<sub>2</sub>) had beneficial effects on browning. The sensory parameters of appearance and browning were significantly affected by the use of antibrowning solution (0.5% AA + 0.4% EDT A) during 10 days of storage at 5 °C.