

Title The development of physicochemical, microbiological and nutritional parameters of broccoli (*Brassica oleracea* var. *Italica*) under simulated postharvest conditions in Bogota, Colombia

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Abstract

Broccoli (*Brassica oleracea* var. *italica*) is a very perishable vegetable. Postharvest losses of broccoli occur due to water loss, yellow coloration, mechanical damage, separation of flowers and rotteness. Broccoli is recognized as an important source of vitamins, minerals and anticarcinogenic compounds which has motivated its increased demand. However, the short shelf life is limiting the potential expansion in the market of developing countries, where postharvest losses are considerable. In this work we studied physicochemical, microbiological and nutritional quality parameters of broccoli (*Brassica oleracea* var. *italica*) after treatments with chlorine dioxide (3 mg/L) and with ozone (0.34 mg/L) under postharvest conditions that simulated commercial handling in the Sabana of Bogota, Colombia. Decrease of acidity and Brix was observed during storage. Phenolics increased, with a maximum value of 20 mg galic acid/100 g of broccoli by the end of the experiment. However, neither phenolic content nor antioxidant activity was found different among treatments. The population of molds and yeasts declined after the treatments, by 0.59 log with chlorine dioxide and by 1.02 log with ozone. Molds and yeasts were reduced until the 6th day of the experiment in the treated materials, while no difference was found later in the trial. It can be concluded that the use of chlorine dioxide and ozone favors microbiological quality of broccoli handled under conditions prevalent in the Sabana of Bogota, Colombia, only during early stages of the postharvest storage.