



Tropentag, September 17-19, 2018, Ghent

“Global food security and food safety:
The role of universities”

Postharvest Application of Chlorine and Rosemary Essential Oil Affects the Quality of Tomatoes

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Abstract

Tomato is highly perishable and has limited shelf life at ambient conditions, its high moisture content makes it encounter high postharvest losses. Tomato quality changes continuously after harvesting; when fruits start lose quality because of environmental stress and pathogen infection. The study determined the effects of chlorine and rosemary essential oil (REO) on the quality parameters and shelf life of fresh tomatoes during storage at ambient temperature. Tomatoes of uniform shape and colour and free from pathogens were selected. Treatments were applied in a central composite design (CCD) where chlorine (100, 200, 300 and 400 ppm of NaClO as hypochlorite of sodium), immersion time (1.5, 3, 4.5 and 6 minutes) and REO (200, 500, 700 and 1000 ppm) were considered factors. Data were analysed in XLSTAT and STATISTICA. Results indicate that significant decrease in weight loss was observed with REO concentrations increase. Physiological changes occurred during storage of fresh tomatoes: most fruits softened with the increase in fruit colour and storage time. At 10 days of storage, all fruits converted to full red independently of the factors, though they were stored at the red light stage. Chlorine and REO concentrations had a positive influence on the preservation of tomato fresh flavour. Results have established that the presence of defects is related to the shorter time of immersion in chlorinated water for fruits surface disinfection, that immediately impact on the fruit shelf life. There was extended shelf life of fruits since they were harvest at later stage for storage (light red).

Keywords: Chlorine, fruit quality, rosemary essential oil, shelf life, tomato