

Title Effect of combined treatment with hot air and UV-C on senescence and quality parameters of minimally processed broccoli (*Brassica oleracea* L. var. *italica*)

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Abstract

Combined treatments with hot air and UV-C were applied to minimally processed broccoli (*Brassica oleracea* L.) florets to investigate their effects on several quality and senescence parameters. To select the optimum treatment, florets were treated with three temperatures (42, 45 and 48 °C) for 3 h and three UV-C doses (5, 8 and 10 kJ m⁻²) in all combinations and then placed in darkness at 20 °C. In general, results suggest that the effect of heat was more important than that of UV-C to prolong postharvest life of broccoli florets. Treatment at 48 °C combined with a UV-C dose of 8 kJ m⁻² caused the higher retention of green color and the higher maintenance of organoleptical quality and was chosen to analyze its effect on other parameters during storage. The selected combined treatment delayed both yellowing and chlorophyll degradation during storage. Moreover, treated broccoli florets showed a higher retention of protein content in relation to controls. The treatment did not affect the total content of sugars but greatly reduced the level of reducing sugars. Results indicate that a combined treatment of UV-C and heat could be a useful method to delay postharvest senescence of minimally processed broccoli during storage at 20 °C.