

**Title** Effect of hot air, UV-C, white light and modified atmosphere treatments on expression of chlorophyll degrading genes in postharvest broccoli (*Brassica oleracea* L.) florets

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#### **Abstract**

Several treatments were applied in order to delay postharvest degreening in broccoli florets and investigate their effects on genes associated with chlorophyll catabolism. Degradation of chlorophylls is the most evident visual manifestation of broccoli postharvest deterioration, occurring rapidly due to the immature stage in which the material is harvested. Treatments such as storage in modified atmosphere, exposure to hot air, UV-C and white lamps were employed in the current work to induce a delay in degreening and chlorophyll degradation. Expression of genes possibly related to chlorophyll catabolism was analyzed in these samples and discussed. Chlorophyllases, the enzymes traditionally believed to remove the phytol side chain from chlorophyll appear to have a gene expression that was not regulated by postharvest treatments. Pheophytinase, a recently discovered new enzyme in this metabolic pathway, correlated chlorophyll loss accurately in heat, UV-C and white-light treatments, but not in modified atmospheres. Results presented in this work indicate that postharvest treatments that delay chlorophyll degradation have a higher effect on the expression of pheophytinase rather than on chlorophyllase genes.