

Postharvest UV-B and UV-C radiation enhanced the biosynthesis of glucosinolates and isothiocyanates in *Brassicaceae* sprouts

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Abstract

The objective of this study was to evaluate the effect of UV lighting (UV-B, UV-C and UV-C + UV-B) as a postharvest abiotic stress in the quality changes of minimally processed *Brassicaceae* sprouts (broccoli and radish) during a shelf-life period of 10 d at 4 °C. No UV illumination was used as control (CTRL). The total UV-C doses received were 9 kJ m⁻² (UVC) and 15 kJ m⁻² UV-B (UVB) by applying the 50 % of such doses after harvest and on the first day of the shelf-life. Results showed that when UVC was applied, the epiphytic microbial load was reduced up to 1 log CFU g⁻¹ fw. The UVB treatment reported the highest total phenolic content (TPC) and total antioxidant capacity (TAC) after 10 d at 4 °C. In general, both species showed an amelioration effect in the TPC and TAC after UV treatments, which also enhanced the glucosinolate (GL) and the main isothiocyanates (ITC) content. In fact, UVB increased by ~30 % the GL content compared to CTRL samples, which were mostly aliphatic GLs in radish and indolyl GLs in broccoli. As main ITC, sulforaphane content was enhanced by 37.5 % in UVB-treated broccoli sprouts while the sulforaphane content was highly increased by 72 % in radish sprouts. In conclusion, UVB radish sprouts reported 5-fold higher GL content and 60-fold higher biologically ITC content than broccoli sprouts. Therefore, its inclusion in the daily intake is recommended to increase the prevention of chronic inflammatory diseases.