

**Title** A Possible Role and Mode of Action of UV-C Illumination and Inducing Chilling Stress Tolerance in Banana Peel

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### **Abstract**

In order to better understand the possible role and mode of action of UV-C illumination on inducing chilling stress tolerance. Banana (*Musa* (AAA group), Cavendish subgroup cv. Cavendish) fruits were treated with three UV-C duration and dosages 10, 15 and 20 sec, (0.002, 0.03 and 0.05 kJm<sup>-2</sup>) prior to storage at 5, 8 and 25°C. As the results, different temperature obviously showed difference response. The chilling injury (CI) symptom was severe at 5°C as compared with 8°C but UV-C treatment reduced CI, corresponding with lower in IC50 values of 1-diphenyl-2-picrylhydrazyl (DPPH)-radical scavenging activity in treated fruit when stored at 5 and 8°C rather than control. Ethylene production and respiration rate of fruits stored at 25°C were activated by UV-C. A higher activity of phenylalanine ammonia lyase (PAL) and total free phenolics also found in treated fruits at 5°C while at 8°C with lower level in comparison with control. In additions, UV-C treatment inhibited increasing of malondialdehyde (MDA) content in fruits stored at 25°C while fruits stored at 5 and 8°C showed higher content of MDA compared with control. It is possible that UV-C at 0.03 kJm<sup>-2</sup> compared with dosage would be available for alleviating CI symptom occurrence in the case of banana. Also these results implied that UV-C could play a role in activation of plant defense mechanisms and antioxidant systems, assisting in reducing chilling stress. However, the study of associated mechanisms in response to UV-C should be elucidated.