

**Title** The effects of exogenous ethylene and methyl jasmonate on the accumulation of phenolic antioxidants in selected whole and wounded fresh produce

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### **Abstract**

Selected fruits and vegetables were exposed to wounding, methyl jasmonate (MJ) or ethylene (ET) stress and effects on the phenylpropanoid metabolism were determined. Lettuce, cilantro, cabbage, green beans, apples, plums, peaches, table grapes, strawberries, bell peppers, asparagus, celery, carrots, radishes, potatoes, and jicama were evaluated for phenolic content and antioxidant capacity (AOX). The phenolic synthesis response to the stresses was tissue-dependent, including decreases, increases or no effects. The use of phytohormones enhanced the wound response on some crops, confirmed by an increase in phenylalanine ammonia lyase (PAL) activity and HPLC phenolic profiles. Several reasons could explain the phenolic accumulation, including the plant genetic machinery, the presence of a common signalling response and differences in phenolic synthesis and degradation kinetics. The synthesized phenolics increased the overall AOX ( $\mu\text{g}$  trolox/g FW) of the tissue. Furthermore, the specific AOX ( $\mu\text{g}$  trolox/mg phenolics) of the synthesized phenolic compounds was influenced by type of tissue and phytohormone used.