

The elicitor AsES stimulates ethylene synthesis, induce ripening and enhance protection against disease naturally produced in avocado fruit

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Abstract

Acremonium strictum Elicitor Subtilisin (AsES) is a natural elicitor capable of inducing disease resistance in strawberry and *Arabidopsis thaliana* plants. In this paper, the effect of AsES on ripening and defense response in the climacteric fruit, avocado (*Persea americana*) was studied. With this purpose ethylene production, respiration rate, weight loss, firmness and soluble solids content were studied. The effect of AsES on natural infestation with local pathogens was also evaluated to assess its capacity to activate a defense response. Controls consisted in fruits treated with water, or treated with 1-Methylcyclopropane prior to AsES (1-MCP + AsES).

Results showed that AsES treatment increases significantly ethylene production at early stages of ripening (3 days post treatment); while in fruits treated with water or 1-MCP + AsES the maximum production occurs later (6 and 7 days post treatment, respectively). Enhanced respiration rate, weight loss and soluble solids content, accompanied with the decreased in firmness were observed in fruits treated with AsES. Also, fruits treated with AsES halted the growth the opportunistic pathogens, whereas the protection effect was not observed when avocado fruit were pre-treated with 1-MCP, suggesting that the effect is due to the activation of the ET defense signaling pathway. These results uncover a potential use of AsES on the postharvest management of ripening, and open new research lines to study the relationship between fruit quality and induction of disease resistance in AsES-treated fruit.