

RESTORING 'ROCHA' PEAR RIPENING UNDER 1-MCP EVERGREEN EFFECT: A COMPARISON BETWEEN NORMAL RIPENING AND AFTER AUXIN TREATMENT

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ABSTRACT

'Rocha' pear (*Pyrus communis* L. cv. Rocha) is a DOP cultivar, from West region of Portugal, appreciated worldwide due to its exceptional organoleptic and nutritional quality [1-2]. It's high exportation has raised the need to develop adequate conditions for long-term cold storage. For about forty years, the postharvest application of diphenylamine was an efficient strategy used to protect fruit from postharvest problems. However, in 2011 its use was prohibited. Nowadays, in combination with cold storage, 1-MCP has been one of the most applied techniques to extend the storage of 'Rocha' pear. However, fruit industry is facing a problem resulting from 1-MCP application which compromise producers' sustainability, because 1-MCP disrupts the normal process of ripening, denominated as "evergreen" effect, affecting the quality of 'Rocha' pear and increasing postharvest losses [3–4].

In this study, we have tested the restoring of ripening via exposure of 1-MCP treated fruits to an auxin. Time course physiological and biochemical analysis comparison with 'Rocha' pear normal ripening, revealed that ripening induction by the auxin treatment, after 1-MCP, is evident from around 60 % of fruit firmness loss and around 50 % increased internal ethylene production. Exogenous auxin treatment increased of 1-aminocyclopropane carboxylic acid (ACC) and malonyl-ACC (MACC) levels, ACC synthase (ACS) and ACC oxidase (ACO) activity and enhanced the pear fruit ripening.

The results provide information regarding how blockage caused by 1-MCP may be circumvented, thus opening avenues for consistent ripening of 'Rocha' pear.

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