

# Preharvest or a combination of preharvest and postharvest treatments with methyl jasmonate reduced chilling injury, by maintaining higher unsaturated fatty acids, and increased aril colour and phenolics content in pomegranate

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## Abstract

In the present research the effects of preharvest 5 mM methyl jasmonate (MeJa) treatments, alone (Pre) or in combination with postharvest 5 mM MeJa treatment (Pre + Post), on reducing chilling injury (CI) of pomegranate during 90 d of storage at 2 °C plus 3 d at 20 °C and its relationship with changes in fatty acid composition of cell membranes were assayed. In addition, fruit and aril quality traits, total content in phenolics and anthocyanins and antioxidant activity of the arils were evaluated. Both, external and internal CI symptoms and the increase in ion leakage (IL) were reduced by Pre and Pre + Post MeJa treatments. The major fatty acids in pomegranate husk were palmitic, oleic, linoleic and linolenic acids. MeJa treatments led to higher concentration of unsaturated fatty acids (UFA) at harvest, which was maintained at higher levels during storage, while saturated fatty acid (SFA) concentration was lower in treated fruit than in controls. The concentration of total phenolics and anthocyanins were lower in the arils from control fruit than in arils of Pre and Pre + Post treated fruit during the whole storage period. In general, there were no significant differences between Pre and Pre + Post MeJa treatments on their effects on reducing CI, maintaining membrane stability and bioactive compounds with antioxidant activity. Thus, preharvest MeJa treatments may be sufficient to increase the cold storage potential of pomegranate fruit by reducing CI symptoms and enhancing the content bioactive compounds with antioxidant activity.