

## Influence of Treatment with *Aloe vera* Extract, Honey Solution and Salicylic Acid on Quality Maintenance of 'Wonderful' Pomegranate Fruits during Cold Storage.

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**Abstract:** The effect of immersing 'Wonderful' pomegranate fruits in 17% *Aloe vera* extract, 20% honey solution, 0.5g/l salicylic acid and mixture solution (*Aloe vera* extract+honey solution+salicylic acid) was studied throughout two successive seasons (2013 and 2014) to evaluate the effectiveness of these safe materials as postharvest treatments on maintaining quality attributes (decay incidence (%), severity, weight loss(%), firmness of fruit and arils, color of fruit and arils, juice content (%), total soluble solids (%), acidity (%), total soluble solids/acidity ratio, anthocyanins content) of 'Wonderful' pomegranate fruits during cold storage (5±1°C, with 85-90% RH) for 90 days compared with control fruits (untreated).

The attained results revealed that, after 90 days of cold storage the majority of assessed attributes were statistically equal in control and adopted treatments. This was untrue for treatments with *Aloe vera* and salicylic acid, since *Aloe vera* treatment in both seasons maintained significant higher fruits firmness and hue angle value of arils color (H°) in relation to control treatment. In addition, this treatment in the 1<sup>st</sup> season decreased weight loss (%) and exhibited higher content juice when comparing with control treatment. Also, in the 2<sup>nd</sup> season, *Aloe vera* treatment significantly decreased decay incidence (%), severity and exhibited higher aril firmness and fruits hue angle color (H°) than that control treatment. Also, treated fruits with salicylic acid had significantly higher juice content (%) in the 2<sup>nd</sup> season in compared to control treatment.

Yet, after 60 days the majority of assessed attributes were positively affected by *Aloe vera* treatment, which in both seasons of the study, significantly decreased decay incidence (%) and severity to the lowest values and had the lowest significant decline in fruits and arils firmness in comparison with control treatment. Furthermore, in the 2<sup>nd</sup> season, *Aloe vera* treatment significantly increased hue angle value of fruit and arils color (H°), juice content (%) and acidity content (%) than that control treatment, which had highest total soluble solids/acidity ratio after 60 days. Meanwhile, salicylic acid achieved significant highest value of hue angle of arils color (H°) when compared with control treatment.

Decay incidence and severity, weight loss (%) and TSS/acidity ratio were increased as cold storage prolonged. In addition, arils juice (%) as well as total soluble solids and anthocyanins content were slightly increased with slight fluctuations throughout cold storage durations in comparison with that at zero time during the 1<sup>st</sup> and 2<sup>nd</sup> seasons with various significant differences. On the contrary, throughout both seasons, the values of firmness and Hue angle of fruits and arils as well as acidity content percentage decreased with the advancing of the storage duration.

Finally, from the above results, it could be concluded that, treatment with *Aloe vera* extract at 17% as natural and safe material followed by 0.5g/l salicylic acid treatment can be recommended to be used effectively in maintaining quality of 'Wonderful' pomegranate fruits during cold storage (5°C) for short time (60-90 days) (representing the conditions of transport, handling, shipment export, market of the fruits) in comparison with remaining treatments.

**Key words:** Wonderful pomegranate, *Aloe vera*, Honey solution, Salicylic acid, Cold storage.