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# EFFECT OF SALICYLIC ACID ON STORAGE LIFE AND POSTHARVEST QUALITY OF POMEGRANATE

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## Introduction

World production and use of pomegranate (*Punica granatum* L.) has been increased popularity in recent years due to its multifunctionality and great nutritional benefit in the human diet. The fruit is grown globally in many different geographical regions, satisfying the nutritional and medicinal needs of populations of various countries (Holland et al., 2009). As production has increased, proper storage and marketing of these fruits is needed to meet the demand both in domestic and export markets. Pomegranate fruit is highly susceptible to fruit weight loss and decay during postharvest handling and storage. Phenolic substances such as salicylic acid are a new group of plant growth regulators that play an important role in growth of plants (Wang et al, 2006). SA, as a natural and relatively safe compound has been reported to have a high potential in maintaining fruit quality and reducing fungal decay in harvested fruits. Postharvest application of SA increased storage life of kiwifruit (Zhang *et al*., 2003), strawberry (Babalar *et al*., 2007), Chinese water chestnut (Peng and Jiang, 2006), peach (Han *et al*., 2003; Wang *et al*., 2006), mandarin (Zhang and Zhang, 2004), pomegranate (Sayyari *et al*., 2009) and sweet cherry fruits (Yao and Tian, 2005).

## Materials and Methods

This study conducted at the Laboratory of Horticultural Science, Shahrekord University in 2013. Experiment was a completely randomized design with four treatments including distilled water (control), three levels of salicylic acid (1.0, 2.0 and 3.0 mM) in three replicates (each replicate consisted of four fruit). Healthy and uniform fruit harvested at commercial maturity and transferred to horticulture laboratory. Then, fruit soaked in different treatments and after that fruit wrapped in paper bags. All fruits immediately after treatment transferred to refrigerator with 5±1 ºC temperature and 90±2 % relative humidity (RH) for 120 days.

**Fruit Weight Loss (%):** to evaluate fruit weight loss, select three fruits of each replicate and weighted with a digital scale (GF-300, Japan). **Total Soluble Solid (TSS):** measured by a hand refractometer (PAL-3, ATAGO, and Japan) reading at 20°C that refractive index expressed as °Brix. **Total acidity (TA):** was determined by titrating fruit juice with 0.2 N NaOH according to AOAC (1990) procedures and expresses as percentage of citric acid per volume of fruit juice. **Acidity (PH):** Fruit juice acidity was determined using a pH meter (MTT65 Japan). **TSS to TA ratio**: is an indicator of fruit flavor for measurement ripening. **Vitamin C:** measured by Potassium iodide and iodine titration method. Statistical analyzes were performed using SAS software and mean differences were compared using LSD at 0.05.

## Results and Discussion

The results showed no significant effect of SA on fruit weight loss, but most maintain weight loss in fruits obtained in SA 3.0 mM treatment. TSS increased in both SA 1.0 and 2.0 mM, treatments compare to control, respectively. However, TSS and TA are reduced at higher level of SA (3.0 mM) compared to control treatments. Acidity significantly reduced at SA 2.0 mM treatment compare to control. The TSS / TA ratio had the greatest influence and increased in SA 3.0 mM compared to control. Fruit vitamin C was significantly more at SA 1.0 mM and was more stable. Sayyari et al. (2009) have reported that SA treatments were highly effective in maintaining vitamin C and TA. The TSS / TA ratio increased during the storage period. The applications of salicylic acid (1.4 mM) showed highest effect on fruit quality and reduce the amount of chilling injury of pomegranate fruit "Rabab Fars".

**Keywords:** Pomegranate, Salicylic acid, TSS, TA, $V_c$

**References**

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