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Improving Qualitative Characteristics of 'Washington Navel' Orange by Calcium Chloride, Potassium Chloride and Salicylic Acid Spray

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According to nutritional disorders in Iran citrus orchards and need to investigate the effects of nutrient elements and growth regulators that have the ability to improve quality and quantity of crop, this study was conducted to investigate the effect of calcium chloride, potassium chloride and salicylic acid on quantitative and qualitative attributes of 'Washington Navel' orange fruit. The experiment was conducted using randomized complete block design (RCBD) with four replications in Janat Shahr, Darab, Fars province, during two successive years. Treatments of experiment included calcium chloride (1.5% and 3%), potassium chloride (1.5% and 3%), salicylic acid (0.015%, 0.03% and 0.045%), combined treatment of calcium chloride, potassium chloride and salicylic acid and control. The spray of aqueous solutions was applied at the end of the first stage of fruit growth, one month after full bloom (fruit diameter was 20 mm) and repeated in late September. Results showed that foliar application of calcium chloride, potassium chloride, salicylic acid, and combination of these treatments had different effects on fruit quality characteristics at the harvest time. Foliar application of potassium had no significant effect on fruit peel potassium. However, peel calcium increased with spraying of calcium chloride. Foliar application of salicylic acid up to 0.03%, significantly increased calcium and potassium contents of fruit peel. Calcium chloride and salicylic acid treatments had the greatest positive effect on fruit quality characteristics. Although, potassium did not have significant effect. The effect of treatments on hue angle, fruit juice content, TSS and antioxidant activity were not significant. Calcium chloride and salicylic acid had a positive effect on the qualitative properties of juice. Calcium chloride at 1.5% and salicylic acid treatments at 0.03% had the most positive effect on the quality characteristics (antioxidant activity and total phenol). Combined treatments had positive effects, but the effect of calcium and salicylic acid was more effective treatments.

Key Words: Antioxidant activity, Color, Carotenoid, Firmness, Total phenol.

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