Antioxidant activity, color, carotenoids composition, minerals, vitamin C and sensory quality of organic and conventional mandarin juice from Chios island, Greece, cv. Citrus deliciosa

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Frequent consumption of fruits and vegetables is associated with a lowered risk of cancer, hypertension and heart diseases due to the various forms of antioxidants present in these foods such as carotenoids. On the other hand consumers demand organic products due to their healthiness, full flavour and aroma and being environmental friendly. Mandarin juices are good source of potassium and antioxidants, e.g. β-cryptoxanthin.

The effects of organic farming on CIEL*a*b* colour, minerals contents, carotenoids composition and sensory quality of Chios mandarin juices were studied. Organic farming of mandarins resulted in juices with higher mineral and carotenoid contents and of better sensory quality. Organic juice contained a total concentration of carotenoids of 17.3 mg L⁻¹ compared to 13.5 mg L⁻¹ of conventional juice.

Organic farming of mandarins resulted in juices with higher antioxidant activity, total carotenoids concentrations, minerals (Ca, K and Fe) contents, vitamin C contents, more appealing and intense orange color and better sensory quality. For instance, organic Citrus deliciosa juice contained significantly (p<0.001) higher total carotenoids content (20.3±0.3 mg/L) than conventional juice (17.7±0.4 mg/L). A similar pattern was observed for the antioxidant activity, with values being 0.086±0.004 and 0.064±0.003 mM Trolox mL⁻¹ in organic and conventional juices, respectively. A trained panel stated that organic Citrus deliciosa juices had higher intensities of orange color, fresh mandarin and floral aromas than conventional juices.