

**Title** Total phenolics and flavonoids and total antioxidant capacity in pistachio (*Pistachia vera* L.) nuts in relation to cultivars and storage conditions

**Author** E. Tsantili, K. Konstantinidis, M.V. Christopoulos and P.A. Roussos

**Citation** Scientia Horticulturae, Volume 129, Issue 4, 27 July 2011, Pages 694-701

**Keywords** Pistachio kernels; Total phenolics; Total flavonoids; Total antioxidant capacity; Drying; Storage conditions

### Abstract

The effects of cultivar, drying and storage conditions on total phenolics (TP), total flavonoids (TF) and total antioxidant capacity (TAC), measured with ferric reducing antioxidant power (FRAP) and radical scavenging capacity (2,2-diphenyl-1-picrylhydrazyl or DPPH) assays, of in-shell and unpeeled kernels of ripe pistachios were investigated. Drying was carried out at 45 °C for 34 h to approximately 5% moisture in kernels and storage of dried nuts in packaging atmosphere of dry air or N<sub>2</sub> at 1 °C or 20 °C for 6 or 12 months. At harvest, each cultivar showed its highest values for each measured variable and TP ranged from 16.2 to 7.9 mg gallic acid equiv. g<sup>-1</sup> d.w., TF from 7.2 to 3 mg catechin equiv. g<sup>-1</sup> d.w., FRAP from 132.5 to 58.8 μmol Trolox equiv. g<sup>-1</sup> d.w., and DPPH from 122.6 to 45.7 μmol Trolox equiv. g<sup>-1</sup> d.w. Drying resulted in losses in all cultivars that averaged approximately 14.2%, 14.1%, 11.9% and 12.2% for TP, TF, FRAP and DPPH, respectively, while during 12-month storage the corresponding losses in dried kernels averaged approximately 24.7%, 21.8%, 30.3% and 32.4%. Decreases in all measured variables were advanced by storage time, but prevented by low temperature and packaging in N<sub>2</sub> atmosphere. Among the studied cultivars, Pontikis, Aegina, Bronte and Cerasola showed higher values of TP, TF and TAC than Sirora, Kerman, Joley and Mumtaz in all cases, while Pontikis the highest in most cases. The effects of cultivar, time, temperature and packaging atmosphere during storage were all significant on TP, TF, FRAP and DPPH. Strong correlations were also found among the measured variables.