



# Antioxidant Activity of Sicilian Pistachio (*Pistacia vera* L. Var. Bronte) Nut Extract and Its Bioactive Components

Carla Gentile, Luisa Tesoriere, Daniela Butera, Marco Fazzari, Massimo Monastero, Mario Allegra,\* and Maria A. Livrea

Dipartimento Farmacochimico Tossicologico e Biologico, Università di Palermo, Via Archirafi 32, 90128 Palermo, Italy

J. Agric. Food Chem., 2007, 55 (3), pp 643–648

DOI: 10.1021/jf062533i

Publication Date (Web): January 17, 2007

Copyright © 2007 American Chemical Society

**Abstract:** *Pistacia vera* L. is the only species of *Pistacia* genus producing edible nuts. This paper investigates the antioxidant potential of a Sicilian variety of pistachio nut by chemical as well as biological assays and measured antioxidant vitamins and a number of antioxidant polyphenols in either the hydrophilic and/or the lipophilic nut extract. In accordance with the majority of foods, the total antioxidant activity, measured as a TAA test, was much higher (50-fold) in the hydrophilic than in the lipophilic extract. Substantial amounts of total phenols were measured. The hydrophilic extract inhibited dose-dependently both the metal-dependent and -independent lipid oxidation of bovine liver microsomes, and the Cu<sup>+2</sup>-induced oxidation of human low-density lipoprotein (LDL). Peroxyl radical-scavenging as well as chelating activity of nut components may be suggested to explain the observed inhibition patterns. Among tocopherols,  $\gamma$ -tocopherol was the only vitamin E isomer found in the lipophilic extract that did not contain any carotenoid. Vitamin C was found only in a modest amount. The hydrophilic extract was a source of polyphenol compounds among which trans-resveratrol, proanthocyanidins, and a remarkable amount of the isoflavones daidzein and genistein, 3.68 and 3.40 mg per 100 g of edible nut, respectively, were evaluated. With the exception of isoflavones that appeared unmodified, the amounts of other bioactive molecules were remarkably reduced in the pistachio nut after roasting, and the total antioxidant activity decreased by about 60%. Collectively, our findings provide evidence that the Sicilian pistachio nut may be considered for its bioactive components and can effectively contribute to a healthy status.

<http://pubs.acs.org/doi/abs/10.1021/jf062533i>