



Antioxidant activity and phenolic profile of pistachio (*Pistacia vera* L., variety Bronte) seeds and skins

Antonio Tomaino, Maria Martorana, Teresita Arcoraci, Domenico Monteleone, Corrado Giovinazzo, Antonella Saija
Department Farmaco-Biologico, Faculty of Pharmacy, University of Messina, Villaggio Annunziata, 98168 Messina, Italy

Abstract: Pistachio (*Pistacia vera* L.; Anacardiaceae) is native of aride zones of Central and West Asia and distributed throughout the Mediterranean basin. In Italy, a pistachio cultivar of high quality is typical of Bronte (Sicily), an area around the Etna volcano, where the lava land and climate allow the production of a nut with intense green colour and aromatic taste, very appreciated in international markets. Pistachio nuts are a rich source of phenolic compounds, and have recently been ranked among the first 50 food products highest in antioxidant potential. Pistachio nuts are often used after removing the skin, which thus represents a significant by-product of pistachio industrial processing. The present study was carried out to better characterize the phenolic composition and the antioxidant activity of Bronte pistachios, with the particular aim to evaluate the differences between pistachio seeds and skins. The total content of phenolic compounds in pistachios was shown to be significantly higher in skins than in seeds. By HPLC analysis, gallic acid, catechin, eriodictyol-7-O-glucoside, naringenin-7-O-neohesperidoside, quercetin-3-O-rutinoside and eriodictyol were found both in pistachio seeds than in skins; furthermore, genistein-7-O-glucoside, genistein, daidzein and apigenin appeared to be present only in pistachio seeds, while epicatechin, quercetin, naringenin, luteolin, kaempferol, cyanidin-3-O-galactoside and cyanidin-3-O-glucoside are contained only in pistachio skins. The antioxidant activity of pistachio seeds and skins were determined by means of four different assays (DPPH assay, Folin-Ciocalteau colorimetric method and TEAC assay, SOD-mimetic assay). As expected on the basis of the chemical analyses, pistachio skins have shown to possess a better activity with respect to seeds in all tests. The excellent antioxidant activity of pistachio skins can be explained by its higher content of antioxidant phenolic compounds. By HPLC-TLC analysis, gallic acid, catechin, cyanidin-3-O-galactoside, eriodictyol-7-O-glucoside and epicatechin appeared to be responsible for the antioxidant activity of pistachio skin, together with other unidentified compounds. In conclusion, our work has contributed to clarify some particular characteristics of Bronte pistachios and the specific antioxidant power of pistachio skins. Introduction of pistachios

in daily diet may be of undoubted utility to protect human health and well-being against cancer, inflammatory diseases, cardiovascular pathologies and, more generally, pathological conditions related to free radical overproduction. On the other hand, pistachio skins could be successfully employed in food, cosmetic and pharmaceutical industry.

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