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Antioxidant Compounds Found In Foods Such As Olive Oil, Honey And Nuts

Posted on: Thursday, 19 November 2009, 11:05 CST

Scientists at the University of Granada have identified and characterized for the first time different antioxidant compounds from foods such as olive oil, honey, walnuts and a medicinal herb called Teucrium polium. They have used two new techniques, capillary electrophoresis and high resolution liquid chromatography, that have enabled them to identify and quantify a great part of the phenolic compounds contained in these foods.

Functional foods such as olive oil, honey, walnuts and a medicinal herb called Teucrium polium are able to provide different health benefits, so their study and characterization is of great interest. Among the compounds that give such functional characteristics to these foods are phenolic compounds that have generated great interest due to their antioxidant capacity, which endows them with a chemopreventive effect in humans and causes them to have a great influence on the stability of oxidation present in food. Therefore, according to UGR researchers, the "identification and quantification [of these compounds] is a good means for the characterization of foods that contain them."

This work has been performed by Ana María Gómez Caravaca, and directed by Professors Alberto Fernández Gutiérrez and Antonio Segura Carretero, from the Department of Analytical Chemistry at the UGR.

Scientists stress that phenolic compounds have a high antioxidant power and also influence the organoleptic properties of food. Therefore, studies such as the one carried out at the UGR are of great interest because they can determine the amount of these compounds present in foods, and also what compounds are included in every matrix, being able to even determine which one presents a higher activity and its concrete action.

Phenolic Fraction
This research has shown the potential of these techniques for the separation, identification and quantification of the phenolic fraction of vegetable matrices, using appropriate methodologies for this purpose and in the case of olive oil, studying certain technical parameters that affect the phenolic profile.

Information obtained by scientists from the UGR is useful because these compounds have many beneficial health properties. It is widely reported that they have a high antioxidant activity and are able to positively influence the organism by preventing the onset of certain diseases (diabetes, obesity, cardiovascular diseases, cancer, arterial hypertension, etc.).

The laboratory analyses were performed using the separation techniques of capillary electrophoresis and HPLC coupled to different types of detectors (UV-Vis, MS, NMR). Capillary electrophoresis connected to mass spectrometry proved to be innovative, as it had never before been used for the analysis of the phenolic fraction of honey and walnut. Moreover, these methods allowed identification of some phenolic compounds in these foods for the first time - a point of great interest for its possible antioxidant activity in the phenolic fraction.

The results obtained during this PhD thesis have resulted in nine publications in international journals such as Electrophoresis, Journal of Chromatography, and Journal of Agricultural and Food Chemistry.

Reference: Ana M^a Gómez Caravaca, Department of Analytical Chemistry, University of Granada.

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