

## **Sunflower seeds with high content of phytosterols:**

### **Influence of the oil extraction system**

M.V. Ruiz-Méndez<sup>a</sup>, M. R. Aguirre<sup>a</sup>, L. Velasco<sup>b</sup> and M.C. Dobarganes<sup>a</sup>

*a*, Instituto de la Grasa, Seville; *b*, Instituto de Agricultura Sostenible, Córdoba.

CSIC. Spain

The growing interest of consumers for those products minimally processed has encouraged the marketing of high value foods that meet these characteristics. In this regard, edible oils extracted by mechanical pressing have added value, as they can be marketed as virgin oils or solvent free oils. In addition, the added value of edible oils also depends on the content and composition of biological active compounds such as phytosterols which prevent the intestinal absorption of cholesterol in humans resulting in a reduction of serum cholesterol.

The objective of this study was to investigate the differences between virgin sunflower oil and solvent extracted oil from new sunflower seeds obtained after a plant breeding program for selection of seeds with high phytosterol content. Results were compared with those obtained for conventional sunflower oil. Apart from sterols, the main characteristics of the oils were analyzed, i.e. fatty acid composition, tocopherol content, unsaponifiable matter, free fatty acids, phosphorous and stability (OSI). Quantification of sterols was performed by high temperature GC directly in the silylated unsaponifiable matter using cholestanol as internal standard. Total sterols in the oils were quantified in two groups: free sterols and sterol glucosides.

The new rich-phytosterol sunflower oils were characterized by high total sterol content (9900 mg/kg in pressed oil and 13700 mg/kg in extracted oil, respectively). The pressed oils had a lower content of total sterols, free fatty acids and phosphorous than the corresponding solvent extracted oils, which indicates that hexane was able to extract higher concentrations of polar components. Unfortunately, pressed oil acidity was 0.56%, i.e. higher than that established for direct consumption in the case of virgin seed oils (< 0.2% as oleic acid). Physical refining would be recommended in this case in order to maintain the *solvent free* label.