Spanish scientists confirm extra virgin olive oil helps to combat breast cancer

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Researchers of the Catalonian Institute of Oncology (Spain) and the University of Granada (Spain) have discovered that extra virgin olive oil may help to combat breast cancer, according to a paper published in the last issue of the renowned scientific journal *BMC Cancer*. The scientists have confirmed the bioactivity of polyphenols (this is, natural antioxidants) present in olive oil in breast cancer cell lines.

The study has proved the anti-HER2 effect of fractions of phenolic compounds directly extracted of extra virgin olive oil in breast cancer cell lines. They have used solid-phase extraction methods of semi-preparative liquid chromatography to isolate fractions of commercial oils and, later, separation techniques (capillary electrophoresis and liquid chromatography connected to mass spectrometry) to check the purity and composition of the fractions.

Such fractions were tested in their anti-cancer capacity both against positive HER2 and negative HER2 breast cancers, using in Vitro models and evaluating the effect of polyphenolic fractions in the expression and activation of HER2 oncoprotein through ELISA specific methods for HER2. Fractions containing polyphonels such as hydroxitirosol, tirosol, elenolic acid, lignans, pinoresinol and acetopinoresinol, and secoiridoids, diacetox oleuropein aglycone, ligustrosid aglycone and oleuropein aglycone were able to induce important tumoricid effects in a range of micromolar and in a selective way against HER2 oncogene.

Proved potentiality

Therefore, this study confirms the potentiality of polyphenols to inhibit HER2 activity and to promote its degradation. Such results, together with the fact that humans have consumed secoiridoids and lignans safely for a long time through oil and olive oil consumption, endorse the fact that such phytochemicals could be an excellent and safe basis for the design of new antiHER2 compounds.

This work has been carried out by **Javier A. Menéndez**, coordinator of the Translational Research Unit of the Catalonian Institute of Oncology (ICO) in Girona, and by doctors **Alberto Fernández Gutiérrez** –in charge of the "Research Group of Analytic, Environmental, Biochemical and Food Control"- and **Antonio Segura Carretero**, member of such group.

This Research Group of the Department of Analytical Chemistry of the University of Granada (Spain) has developed other interesting research works in the characterization of polyphenolic profiles of an important number of plants and metabolomic studies of extracts with proved bioactivity through the use of advanced separation techniques.

Source: Universidad de Granada

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