New anti-cancer components of extra-virgin olive oil revealed

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Good quality extra-virgin olive oil contains health-relevant chemicals, 'phytochemicals', that can trigger cancer cell death. New research published in the open access journal *BMC Cancer* sheds more light on the suspected association between olive oil-rich Mediterranean diets and reductions in breast cancer risk.

Javier Menendez from the Catalan Institute of Oncology and Antonio Segura-Carretero from the University of Granada in Spain led a team of researchers who set out to investigate which parts of olive oil were most active against cancer. Menendez said, "Our findings reveal for the first time that all the major complex phenols present in extra-virgin olive oil drastically suppress overexpression of the cancer gene HER2 in human breast cancer cells".

Extra-virgin olive oil is the oil that results from pressing olives without the use of heat or chemical treatments. It contains phytochemicals that are otherwise lost in the refining process. Menendez and colleagues separated the oil into fractions and tested these against breast cancer cells in lab experiments. All the fractions containing the major extra-virgin phytochemical polyphenols (lignans and secoiridoids) were found to effectively inhibit HER2.

Although these findings provide new insights on the mechanisms by which good quality oil, i.e. polyphenol-rich extra-virgin olive oil, might contribute to a lowering of breast cancer risk in a HER2-dependent manner, extreme caution must be applied when applying the lab results

to the human situation. As the authors point out, "The active phytochemicals (i.e. lignans and secoiridoids) exhibited tumoricidal effects against cultured breast cancer cells at concentrations that are unlikely to be achieved in real life by consuming olive oil".

Nevertheless, and according to the authors, "These findings, together with the fact that that humans have safely been ingesting significant amounts of lignans and secoiridoids as long as they have been consuming olives and extra-virgin oil, strongly suggest that these polyphenols might provide an excellent and safe platform for the design of new anti breast-cancer drugs".

Paper: Anti-HER2 (erbB-2) oncogene effects of phenolic compounds directly isolated from commercial Extra-Virgin Olive Oil (EVOO), Javier A Menendez, Alejandro Vazquez-Martin, Rocio Garcia-Villalba, Alegria Carrasco-Pancorbo, Cristina Oliveras-Ferraros, Alberto Fernandez-Gutierrez and Antonio Segura-Carretero, *BMC Cancer* (in press), www.biomedcentral.com/bmccancer/

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