

## Title:

# Exploitation of olive oil industry products and by-products for pilot isolation and semi-synthesis of promising medicinal agents

## Abstract

Olive oil and olive fruits, the main products of *Olea europaea* and the key ingredient of Mediterranean diet, are characterized by substantial nutritional and health beneficial value [1]. However, despite olive oil's economic and health impact, its industry is associated with environmental problems derived from the vast quantity of by-products, such as vegetation waters, olive cake, olive pulp and olive branches and leaves. [2] The amount of olive leaves produce every year exceed 18 million tons and mostly are used as animal feed, compost production or simply are burned, causing serious environmental damage. In a recent study was found that burning of olive tree branches is a major organic aerosol source in the Mediterranean region.[3] However this material still contains high value-added compounds such as triterpenoids, secoiridois, flavonoids, phenolic alcohols, phenolic acids, lignans which are known as olive polyphenols. All these constituents have a strong antioxidant profile and there is an increased industrial interest for possible nutraceutical and pharmaceutical applications. Our work is focused on finding alternative strategies to manage the residues of olive oil industry following two axis. Firstly the development of liquid/ liquid or solid/liquid extraction followed by partition chromatography techniques for the isolation of these compounds in multi gram scale. Secondly the use of some of these compounds such as oleoside, EDA as starting material for the hemi-synthesis of new analogues and their evaluation as potential antitumor agents.

[1] Owen RW, Giacosa A, Hull WE, Haubner R, Würtele G, Spiegelhalder B, Bartsch H. Olive-oil consumption and health: the possible role of antioxidants. *Lancet Oncol* 2000; 1: 107–11

[2] Cavaca L, Lopez-Coca I, Silvero G., Afonso C. The olive-tree leaves as a source of high-added value molecules. *Studies in Natural Products Chemistry*, 64, 131-180

[3] Kostenidou E, Kaltsonoudis C, Tsiflikotou M, Louvaris E, Russel L, Pandis S. Burning of olive tree branches: a major organic aerosol source in the Mediterranean. *Atmos. Chem. Phys. Discuss.* 13, 2013, 7223-7226