

## ABSTRACT

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Scavengers of reactive oxygen and nitrogen species (RONS) or shortly antioxidants could have beneficial effects in diseases associated with oxidative stress. In addition, antioxidants are widely used today for stabilization of fats and oils in food matrices. Hydroxytyrosol, the main phenolic compound of olive oil, possesses strong antioxidant activity. Due to its highly polar nature it is less soluble in lipophilic environment that limits its use as antioxidant in foods and in prevention/treatment of diseases. The aim of this thesis was to compare scavenging potential of parent compound hydroxytyrosol to its lipophilic esters with different side chain length.

Antioxidant capacity of these esters that were synthesized in the Laboratory of Chemistry, Department of Mechanical and Industrial Engineering in university Roma Tre, were examined *in vitro* in 2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonic acid diammonium salt (ABTS) radical scavenging assay and in L6-myoblasts in culture dichlorofluorescein (DCF) fluorescent method. Results were compared with antioxidant capacity of free hydroxytyrosol and that of reference compound Trolox, a water soluble analog of vitamin E. Hydrophilic and lipophilic ABTS assays as well as cell-cultures experiments showed that better antioxidant capacities have esters with medium sized acyl chains within an ideal range of C6-C10. Cellular experiments showed marked decrease of antioxidant activity in esters with side chain longer than 10 carbons. None of tested compounds was significantly more active than Trolox in cells