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Effect of oil (sunflower oil) consumption with added hydroxytyrosol (natural antioxidant) on antioxidant variables in leucocytes from healthy adults

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Hydroxytyrosol (3,4-dihydroxyphenylethanol; HT), also known as dihydroxyphenylethanol, is a natural phenolic antioxidant^(1,2) found in olives and olive oil that is responsible for their antioxidant properties⁽³⁾. Although HT is known to exert an antioxidant effect, the mechanism of its action and the identity of the reactive oxygen molecule(s) targeted are not known⁽⁴⁾. The aim of the present study was to evaluate the effect of oil (sunflower oil) consumption with 'Oleoactive from Koipesol' (Sos Cuetara SA, Madrid, Spain), which contains added HT and is consumed at the level of 45–50 mg/d, on two antioxidant variables (total glutathione levels and glutathione peroxidase (GPx) activity) in leucocytes (neutrophils and lymphocytes) from healthy adults. The design was a randomized cross-over study with twelve healthy subjects of both gender (20–45 years of age). The subjects were divided into two groups. Group A (*n* 6): 3 weeks of oil (sunflower oil) with added HT; 2 weeks of wash-out; 3 weeks of oil (sunflower oil) without added HT. Group B (*n* 6): 3 weeks of oil (sunflower oil) without added HT; 2 weeks of wash-out; 3 weeks of oil (sunflower oil) with added HT. The antioxidant variables (total glutathione in lymphocytes and neutrophils and GPx activity in lymphocytes) were analysed before starting oil (sunflower oil) intake and at the three other time-points during the study. In both groups tested the total glutathione levels in lymphocytes did not show significant changes. Nevertheless, in group A glutathione levels in neutrophils and GPx activity in lymphocytes increased in the subjects after the intake of oil (sunflower oil) with added HT (Figure), however no changes were found in group B. In conclusion, HT could protect against oxidative damage since it increases the levels and the activity of two very important antioxidants in the immune cells.

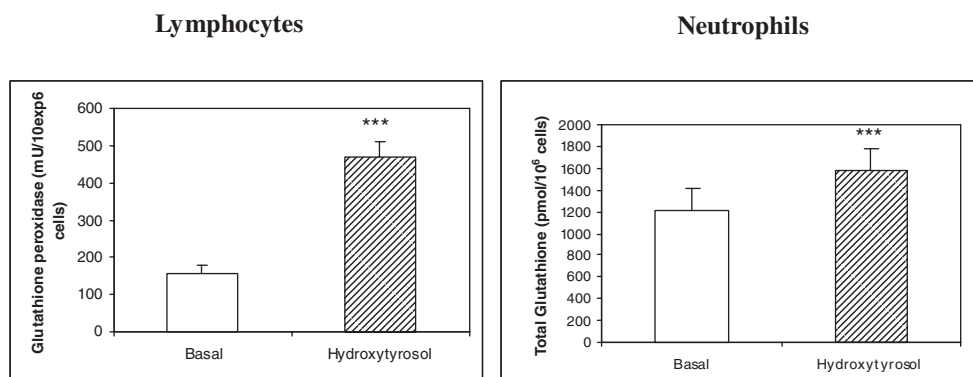


Figure. GPx activity in lymphocytes and total glutathione levels in neutrophils from subjects in group A before (basal) and after 3 weeks of oil (sunflower oil) intake with added HT. Values are means and standard deviations represented by vertical bars. Mean values were significantly different from basal values: ****P*<0.001.

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