Olive Oil Phenolic Compounds: May Prevent Cancer in Human?

Fabiani Roberto
Department of Chemistry, Biology and Biotechnology, University of Perugia, Via del Giochetto 06126, Perugia, Italy

Corresponding author: Fabiani Roberto, Department of Chemistry, Biology and Biotechnology, University of Perugia, Via del Giochetto 06126, Perugia, Italy. Tel: 3907558573327336; E-mail: roberto.fabiani@unipg.it

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Editorial

The most distinctive feature of the Mediterranean diet is the presence of olive oil as the main source of fat. Olive oil is widely used in the Mediterranean regions as a dressing and for the preparation of all foods. In particular “extra virgin” olive oil, contains among the others, some peculiar phenolic compounds (PC) which are not present in other oils and in other vegetable foods. These include the phenolic alcohols hydroxytyrosol (3,4-dihydroxyphenyl-ethanol: 3,4-DHPEA) and tyrosol (p-hydroxyphenyl-ethanol: p-HPEA) which are present in the olive oil as such or are combined with either the elenolic acid (EA) or the dialdehydic form of EA (EDA) giving rise to the so called secoiridoid derivatives (3,4-DHPEA-EA “oleaneupin aglycon”; 3,4-DHPEA-EDA; p-HPEA-EA "ligstroside aglycon”; p-HPEA-EDA) [1].

In olive fruit and leaf the glycosilated secoiridoid precursors oleuropein and ligstroside are mainly present. The concentration of these PC in olive oil is extremely variable from a few mg/kg up to 800 mg/kg and depend upon different agronomic and technological aspects of olive oil production [1]. Recently, numerous different biological effects of olive oil PC have been deeply investigated both “in vivo” and “in vitro” systems. They have shown anti-oxidant and anti-inflammatory activities associated to beneficial effects against cardiovascular, metabolic and neurological diseases, and cancer (for recent reviews [2-4]).

From the epidemiological point of view, several studies have suggested that uptake of olive oil is associated to a reduced risk of cancer in different organs. A meta-analysis published in 2011 summarized the results of 19 observational studies and showed that high olive oil consumption was associated with lower risk of cancer in humans. Lipids Health Dis 10: 127.

For example, risk of breast cancer among premenopausal women was decreased by 10.4% [5]. It must be noted, however, that so far the epidemiological studies have not provided the original author and source are credited.

References


The above reported evidences, supporting the chemo preventive potential of olive oil PC should promote further research in this field by carrying out human intervention studies. This possibility is offered by olive phenols enriched dietary supplements which are actually available on the market. In addition, these compounds may represent new class of phytochemicals for the discovery of previously unrecognized antitumor molecules which could be used for the design of functional foods.


