

## Production of Functional Crackers Enriched with Olive (*Olea europaea* L.) Leaf Extract

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**Abstract :** In recent years, considerable interest has been shown in the functional properties of foods, and a relevant role has been played by phenolic compounds, able to scavenge free radicals. A more sustainable agriculture has to emerge to guarantee food supply over the next years. Wheat, corn, and rice are the most common cereals cultivated, but also other cereal species, such as barley can be appreciated for their peculiarities. Barley (*Hordeum vulgare* L.) is a C3 winter cereal that shows high resistance at drought and salt stresses. There are growing interests in barley as ingredient for the production of functional foods due to its high content of phenolic compounds and Beta-glucans. In this respect, the possibility of separating specific functional fractions from food industry by-products looks very promising. Olive leaves represent a quantitatively significant by-product of olive grove farming, and are an interesting source of phenolic compounds. In particular, oleuropein, which provide important nutritional benefits, is the main phenolic compound in olive leaves and ranges from 17% to 23% depending upon the cultivar and growing season period. Together with oleuropein and its derivatives (e.g. dimethyloleuropein, oleuropein diglucoside), olive leaves further contain tyrosol, hydroxytyrosol, and a series of secondary metabolites structurally related to them: verbascoside, ligstroside, hydroxytyrosol glucoside, tyrosol glucoside, oleuroside, oleoside-11-methyl ester, and nuzhenide. Several flavonoids, flavonoid glycosides, and phenolic acids have also described in olive leaves. The aim of this work was the production of functional food with higher content of polyphenols and the evaluation of their shelf life. Organic durum wheat and barley grains contain higher levels of phenolic compounds were used for the production of crackers. Olive leaf extract (OLE) was obtained from cv. 'Biancolilla' by aqueous extraction method. Two baked goods trials were performed with both organic durum wheat and barley flours, adding olive leaf extract. Control crackers, made as comparison, were produced with the same formulation replacing OLE with water. Total phenolic compound, moisture content, activity water, and textural properties at different time of storage were determined to evaluate the shelf-life of the products. Our the preliminary results showed that the enriched crackers showed higher phenolic content and antioxidant activity than control. Alternative uses of olive leaf extracts for crackers production could represent a good candidate for the addition of functional ingredients because bakery items are daily consumed, and have long shelf-life.

**Keywords :** barley, functional foods, olive leaf, polyphenols, shelf life

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