

Natural vs. Synthetic Antioxidants in Designing Healthy Edible Oils

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As applied to vegetable oils, antioxidants are key agents for improving oxidative stability, but also a debatable issue regarding health promoting substances in the major edible oils. This paper aims to summarize the arguments that advocates for improving the nutritional qualities of sunflower oil by exploiting the potential of natural antioxidants, less harmful to human body than synthetic ones. Recently, the antioxidant activities of certain anthocyanins (polyphenols) were shown to be still higher than the activity of α -tocopherol or ascorbic acid, thus we suggest these novel phytochemicals to be used for increasing the current antioxidant content (0.33 mmol/100g) of sunflower oil. The main argument of natural antioxidants is pleading for public health, knowing that food is the most controllable factor in favor of a healthy lifestyle. For example, highest effectiveness in stabilizing sunflower oil was obtained from methanolic extracts of *Phlomis bruguieri*, and *Stachys laxa*. Other findings strongly suggest the possibility of holding in plants a viable source of natural antioxidants of high performance (phenols and phenolic acids, phytosterols, tocopherols, carotenoids, flavonoids, catechins). On the other side, common phenolic synthetic antioxidants include Butylated Hydroxyanisole, Butylated Hydroxytoluene, Propyl Gallate, and Tertiary Butyl Hydroquinone. Table below summarizes properties of the two categories weighed.

Natural antioxidants	Synthetic antioxidants
Multiple health benefits	May cause adverse effects in humans
Are more readily accepted by the body	Require more effort in metabolism
Can be used as pigments (anthocyanins) or flavoring (spices)	Their property is only to stabilize oil
There are a variety of plants, according to a specific geographical area (traditional fingerprint)	They don't offer a variety of products
Antioxidant effects in human tissues	No antioxidant effects in human tissues
May offer the quality of functional food to oils (nutraceuticals)	Don't offer nutritional qualities
Are recommended to be consumed raw (benefits ceased by cooking heat) - which advocates for healthy eating	Their quality is not influenced by cooking heat (recommended for frying)
Involve higher production costs	Involve lower manufacturing costs
Are still in research phase	Are used on large industrial scale
Could help in developing of SMEs (smaller-scale production)	High productivity – in large enterprises

Based on reviewing current knowledge on antioxidants in edible oils composition, we propose a questionnaire as a tool for population needs assessment on the role of fats and oils in developing healthy eating habits.

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