

Antioxidant properties of thirty commercial cultivars of apples from Alcobça region (Portugal): edible portion *versus* by-products

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Alcobça is a region located in the centre of Portugal known by its unique edaphoclimatic conditions – that make it the largest apple production region in the country. The “Maçã de Alcobça” is one of the 1257 products registered as Protected Geographical Origin (PGI) by the eAmbrosia database of the EU [1]. This fruit is widely appreciated worldwide, not only because of the organoleptic properties, but also because of their antioxidant properties and association with lower risk of cardiovascular diseases [2-3].

The objective of this work was to determine the antioxidant properties as well as estimate the fructose content of 30 commercial cultivars produced in the Alcobça region. The antioxidant properties were evaluated through antioxidant capacity tests (DPPH radical scavenging and β -carotene bleaching). Moreover total phenolic content and total flavonoids were also determined. The fructose content was assessed as per Ashwell [4].

Overall, the by-products of the commercial cultivars of apple presented a higher antioxidant capacity than the pulp. The *Fujion* cultivar, for instance, presented a antioxidant capacity of 76.4 μ g Trolox equivalents (TE)/g of fresh fruit on the peels, comparatively to 53.7 μ g TE/g of fresh fruit on the seeds and 22.1 μ g TE/g of fresh fruit in the pulp.

These results show that the by-products of the studied commercial cultivars of the studied apples fruit can be used as a valuable source of natural antioxidants, avoiding their waste and guaranteeing their valorisation for instance, by food industry, in a circular economy concept.

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