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# Alimentazione e Nutraceutica nella Gestione delle Malattie Croniche non Trasmissibili

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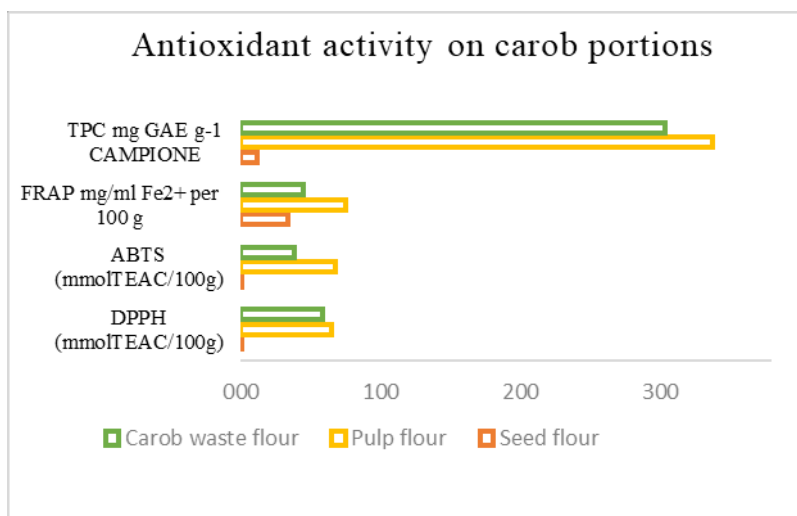
## Exploring the Potential of Carob (*Ceratonia siliqua L.*) in Functional Food Production

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Carob-based functional foods have recently gained considerable consumer interest as natural and sustainable alternatives due to their remarkable nutritional profile and associated health benefits<sup>1</sup>. These products are obtained from the pods of *Ceratonia siliqua L.*, a tree native to Mediterranean regions, and are naturally sweet, caffeine-free and rich in bioactive compounds such as polyphenols, dietary fibre and essential minerals<sup>2</sup>. This work explores the potential of carob for the development of functional foods, focusing specifically on the analysis of carob seed flour, carob pulp flour, and flours obtained from by-products of primary carob processing.

Preliminary analyses were based on the determination of total polyphenols (TPC) by Folin ciocalteau test and antioxidant activity by DPPH, ABTS and FRAP assays. Among the analysed samples, the pulp flour showed the highest TPC (337.86 mg GAE/g) and antioxidant activity (DPPH: 65.03 mmol TEAC/100g; ABTS: 67.64 mmol TEAC/100g; FRAP: 75.18 mg/ml Fe<sup>2+</sup>), followed by carob waste flour (TPC: 303.80 mg GAE/g; DPPH: 58.00 mmol TEAC/100g; ABTS: 38.47 mmol TEAC/100g; FRAP: 44.78 mg/ml Fe<sup>2+</sup>). In contrast, seed flour showed significantly lower values in all parameters. These results highlight the potential of carob derivatives as valuable ingredients for functional food production, promoting both nutritional improvement and sustainable use of agro-industrial by-products. The high content of bioactive compounds in carob and its components makes it an innovative ingredient with potential applications in a wide range of health-beneficial food products, warranting further research to fully explore its nutritional and industrial potential.



**Keywords:** antioxidants; fibers; gut-health; polyphenols; food industry.

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