Healthy compounds from vegetable matrices: an overview ranging from biodiversity to by-products

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Abstract:
Nowadays, the theme of “healthy food” is a growing trendy topic and has become a priority of the European agenda since it is related to the prevention of chronic diseases and age-related pathologies. In this framework, our team is studying the bioactivity of different plant matrices: from industrial by-products, to the bioprospecting of uncommon varieties of staple crops or spontaneous species. Specifically, we investigated the nutraceutical properties of *Cinnamomum verum* J. Presl*, Camelina sativa* (L.) Crantz subsp*. sativa* by-products*, Vigna unguiculata* (L.) Walp. beans and *Corchorus olitorius* L. leaves. In this context, phytocomplexes, purified fractions and *in vitro* simulated human digestion have been shown appreciable biological activities, promoting healthy nutritional solutions both from food commodities and low exploited varieties. Overall, these case studies highlighted peculiar nutraceutical properties of the plant-based items. In particular, leafy vegetables and spices are great sources of antioxidant compounds, able to protect cells from oxidative stress, while legumes and food by-products display selective cytotoxicity against colorectal cancer cell systems.
This research activity will impact the concept of nutritional prevention, by suggesting valuable dietary habits through unexplored plant crops, supporting sustainability in a circular economy perspective and unravelling the impact of physiological processes such as digestion on the quality of plant foods.