

Sustainable use of fruit and vegetable by-products as new food ingredients: the case of fortified cereal-based products.

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In recent years, the issue of sustainability has been widely discussed, being the future challenge for the food sector. Among the various strategies proposed to promote the development of a sustainable food system, the recovery, recycling and valorization of food by-products is one of them. Fruits and vegetables have the greatest amounts of by-products, which are source of bioactive compounds and therefore can be re-utilized as functional ingredients for development of novel foods. In this scenario, the possibility of using by-products of olive oil industry, tomatoes industry and the wine making process, was evaluated. In particular, after an adequate drying and grinding process, the olive paste flour (10% w/w) was used to enrich bread, while tomato peel flour (10 and 15% w/w) and red grape marc flour (15 % w/w) were used to enrich pasta. The sensory quality and the nutritional characteristics (total phenolic compounds, flavonoids and antioxidant activity) of the enriched were evaluated and compared to control samples. In addition, the bio-accessibility of bioactive components and their effects on the glyceemic response were also assessed. In general, results suggest that the proper fortification with these by-products improved the nutritional quality and also the glyceemic response (active samples vs control) without compromising products acceptability. It can be concluded that these examples represent a starting point for exploiting these industrial by-products and creating valid food with beneficial properties.