

Food Matrices Enriched with Horseradish Products and Their Bioavailability

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Horseradish is a plant of the cruciferous family rich in bioactive compounds. By enriching various food matrices with such plant products, it is possible to provide benefits to final consumers. The aim of the study was to investigate the effect of horseradish products on the physicochemical properties of different food matrices, as well as to evaluate the in vitro bioavailability. Horseradish products (microencapsulated leaf and root juice, leaf and root pomace) were added to food matrices such as pasta, butter cookies, fresh pork chops and minced pork. Food matrices without added horseradish products were used as controls. The total phenol content (TPC) and antioxidant activity was determined before and after treatment in an in vitro model of the human digestive tract, and calculated their bioavailability index (PAC). Food matrices enriched with horseradish products had significantly higher TPC and antioxidant activity than control samples. In previous studies horseradish leaves had a higher content of bioactive compounds than horseradish roots. Consequently, added horseradish leaf products showed higher efficiency than root products. The added horseradish products increased the TPC bioavailability index (PAC) in the analyzed food matrices. Horseradish products have a higher potential of functional ingredients and the results of the study show a significant benefit of enriching the analyzed food matrices with phenolic compounds. The TPC bioavailability index also confirmed high bioavailability. Further research is needed to optimize the formulations of functional food matrices, making them more attractive to final consumers, as well as examining the health effects of added bioactive compounds.

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