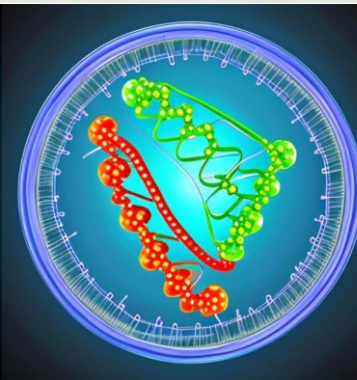
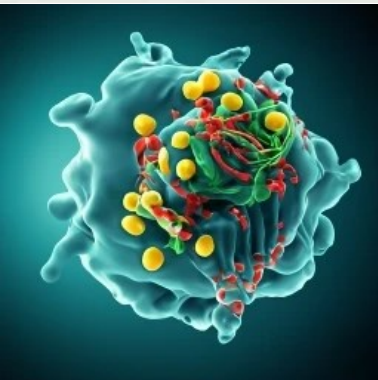




FoodOmics 2024

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ABSTRACT BOOK

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Einkorn-based or semolina-based pasta: which is the best choice as source of bioactive compounds?

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The aim of this work was to analyze the chemical/nutritional composition of an einkorn-based pasta (pilot) and compare it to its counterpart benchmark. Pasta cooking conditions were standardized and the analysis were performed on raw and cooked pasta, as well as on the corresponding digested samples. Regarding the profile of the major lipid classes, a higher content of free fatty acids (FFA) and partial glycerides were found in einkorn pasta samples before and after cooking. This tendency was maintained even after cooking due to the chemical hydrolysis that occur during boiling. As for triglycerides, however, higher values were found in benchmark

samples compared with pilot ones formulated with einkorn flour. After *in vitro* digestion, the most abundant lipid class turned out to be FFA, while still maintaining the same lipid class profile found in the samples before digestion. Regarding the fatty acid (FA) composition, einkorn-based pilot and benchmark raw pasta had similar levels of saturated (SFA \cong 17-19% of total fatty acids), monounsaturated (MUFA \cong 19-20%), and polyunsaturated fatty acids (PUFA \cong 58-63%). However, cooking led to an increase in PUFA and a decrease in MUFA in both types of pasta, while SFA concentration was not affected. Furthermore, essential fatty acids followed the same pattern as PUFA. The PUFA/SFA ratio (\cong 3.2) resulted to be similar in both analyzed products, while the *n*-6/*n*-3 ratio was higher in pilot pasta (18 vs. 14). On the other hand, after *in vitro* digestion, there was a decrease in the content of PUFA and EFA and an increase in MUFA; however, the *n*-6/*n*-3 ratio remained almost constant, being always higher in the pilot pasta. In the case of the sterol content, it was 2 times higher in the einkorn-based pilot pasta than in the benchmark product. Moreover, cooking had a major impact in wholegrain semolina products, leading to a 42% loss in total sterols, compared to the pilot pasta (29%). Regarding the phenol composition, more insoluble phenols were found than soluble ones in both types of pasta samples before and after cooking, as well as after their *in vitro* digestion. Finally, the tocopherol content in the einkorn-based pilot samples was 2-times higher than that of the benchmark pasta. In conclusion, these results allow us to state that, in comparison with the benchmark, the pilot pasta had a higher content of bioactive compounds, which remained in the product at higher

concentrations after cooking, as well as after *in vitro* digestion. These bioactive compounds could thus potentially exert their beneficial role on human health, representing a valorization trait for this food supply chain and the pilot product commercialization.

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