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ABSTRACT BOOK

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Hôtel Mercure Paris Centre Tour Eiffel
20 Rue Jean Rey, 75015 Paris, France

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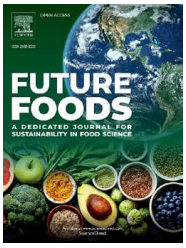

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Sustainable Food Technology

common and durum, heritage and modern wheat varieties grown in different fields sited at different altitudes was analyzed. Data were processed by multivariate analysis, and partial least square (PLS) analysis evidenced that wheat concentration was the highest source of VOCs variance, followed by altitude of cultivation, wheat species, and ancientness. The effect of wheat variety was explored by PCA-LDA (principal component analysis tandem linear discriminant analysis), which permitted to correctly classify craft beers made with wheat of different origin (species and variety) on the basis of their VOCs profile. PLS regression analysis permitted to find a combination of VOCs able to predict the altitude of wheat cultivation as well as to correctly classify wheat beers made with wheat cultivated at different altitudes. A further 'one versus all' approach by PLS-DA permitted to find a combination of VOCs able to discriminate between beers made with different wheat species. Findings suggest that prime material has a crucial importance on the definition of the VOCs profile of craft wheat beer and that the effect of environmental stresses induced by altitude on wheat crops is more important than the wheat species effect, which, in turn, was higher than that of variety.

The Effect of Milling and Processing on the Content of Bioactive Compounds and Gliadin Immunogenic Epitopes of Tritordeum and Bread Wheat

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Abstract:

The growing demand for nutritionally valuable foods registered in recent years has drawn attention to non-traditional cereals characterized by increased phytochemical content. In this sense, the new species tritordeum has started to be explored due to a substantially high accumulation of carotenoids in the endosperm[1] and good bread-making properties.[2] The aim of the present work is to provide new knowledge about tritordeum as a potential novel raw material compared to bread wheat, and specifically to clarify the influence of two milling methods (roller and stone milling) and four technological processes (production of breadsticks, bread, pizza and fresh pasta) on the content of phytochemicals and gliadin immunogenic epitopes, according to a full factorial design. The type of milling contributed the most to the variation in the levels of phenolic acids, β-glucans, and antioxidant capacity, with significantly higher values in stone-mill samples than refined ones. Overall, tritordeum products had advantages over bread wheat in terms of carotenoids (+207%), soluble (+33%) and cell-wall bound (+3%) phenolic acids, antioxidant capacity (+35%), and R5 gliadins (-12%). The processing resulted in a significant reduction of the investigated phytochemicals, compared to flour, albeit at different rates in relation to the final product, with the least degradation observed in breadsticks and bread than in fresh pasta and pizza. The selection of specific milling fractions of non-traditional cereals with an initially higher content of health-promoting phytochemicals may represent a tool to retain the highest concentration in the final baked and pasta products.