

APPLICATION OF NMR SPECTROSCOPY FOR TRACING IMPROVED NUTRITIONAL VALUES IN CACIOTTA-LIKE CHEESES

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Supplementing the Caciotta-like cheeses with such additives as blackcurrant and Cornelian cherry could improve the food's health benefactory properties due to increased contents of polyphenols, a class of bioactive compounds [1]. A combination of analytical methods including Folin–Ciocalteu reaction, microbial community determination, organoleptic tests and ¹H NMR spectroscopy was used to differentiate cheeses from different suppliers [2]. PCA score plots of the NMR spectra from aqueous extracts of the cheese samples demonstrate a reasonable clustering appearing according to the enrichment with 25% of variance captured by the first principal component and 23% by the second principal component. Such metabolites as gamma-aminobutyric acid, histamine, and organic acids levels are found somewhat higher in blackcurrant than in control and Cornelian cherry cheeses, and by contrast, lower levels of glucose monosaccharides are found in blackcurrant than in control and Cornelian cherry cheeses (see Fig. 1).

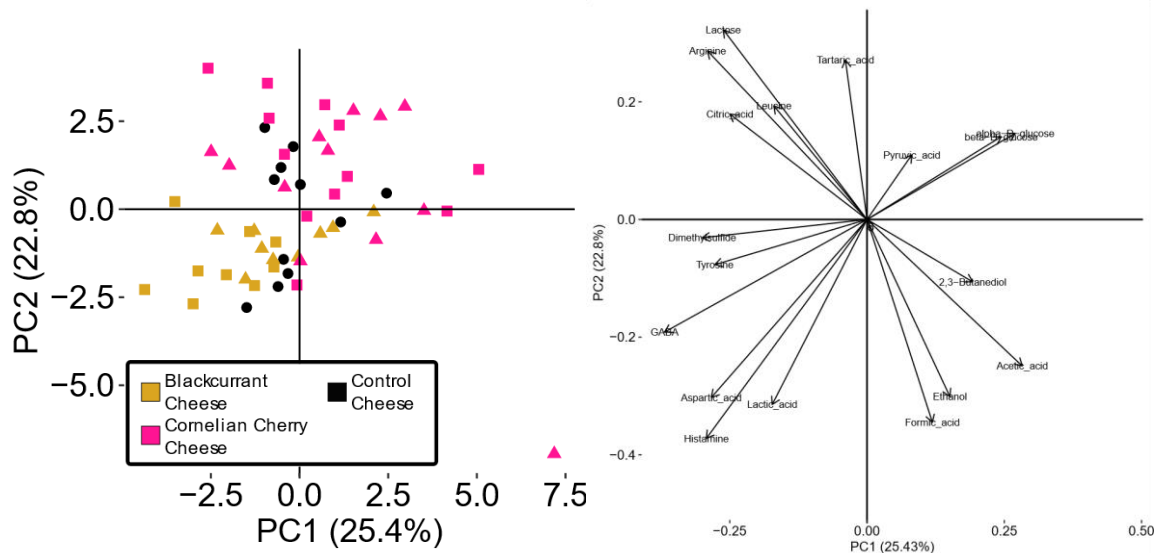


Fig. 1. Scores plot of a two-component PCA model of NMR spectra showing sample clustering according to ingredient addition (left) and loading plot of a two-component PCA model of NMR spectra showing sample clustering according to ingredient addition (right)

As a result, the enrichment was able to improve total polyphenolic contents of the studied products and a metabolite compositional change in cheeses enriched with blueberries indicates a positive effect of this additive on the lactic acid bacteria growth.

References:

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