

Branched-chain amino acid content: a new potential tool to qualify cow milk

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Short title: **Branched-chain amino acid content to qualify milk**

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Summary

The aim of the study, in this Research Communication, was to find suitable amino acid biomarkers enabling the easy and rapid diagnosis of subclinical mastitis in cows.

The early diagnosis of subclinical mastitis represents a pivotal factor for a prompt and adequate treatment of the animal. The somatic cell count (SCC), commonly used as predictor of intramammary infection, frequently lead to a misclassification of milk samples. In order to overcome these limitations, more specific biomarkers are continuously evaluated, and it was found that total amino acid content increased significantly in mastitis milk compared to normal one.

Accordingly, in the present work a reversed-phase HPLC method based on the use of an evaporative light scattering detector and the heptafluorobutyric acid as ion-pairing agent was successfully applied for the direct analysis of the amino acid content in 65 cow milk samples. Milk samples were divided in two groups according to their SCC value (group I with SCC < 200,000 cells/mL; group II with SCC > 300,000 cells/mL). The application of the analysis of variance and the Tukey's test shed light on statistically significant differences in the content of the branched-chain amino acids (BCAAs) isoleucine and leucine, between the two groups. The two BCAAs could represent a new valuable tool for a rapid diagnosis of subclinical cow mastitis and hence to qualify cow milk in association with other traditional SCC-based methods.