



Screening for flavour producing lactic acid bacteria by an MS-based electronic nose

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Introduction

Lactic acid bacteria (LAB) are widely used in food fermentation. In cheese making, dairy lactobacilli and lactococci are key players in flavour and aroma formation. Volatile flavour compounds are mainly generated by the microbial metabolism of citrate, amino acids and fatty acids (1). These biochemical reactions are very important for the development and ripening of cheese as they impact cheese flavour in either beneficial or undesirable ways.

An electronic nose based on mass spectrometry is an easy and powerful tool for the differentiation and classification of LAB (2). ALP used the technique and multivariate data analysis to screen 46 different genotypes of *Lactobacillus casei* for production of volatile compounds. The bacteria were incubated in buffers containing suitable precursors for the production of volatile compounds. Bacteria producing elevated amounts of 3-methylbutanal/3-methylbutanol from leucine were selected for making Gruyère cheese.

Results

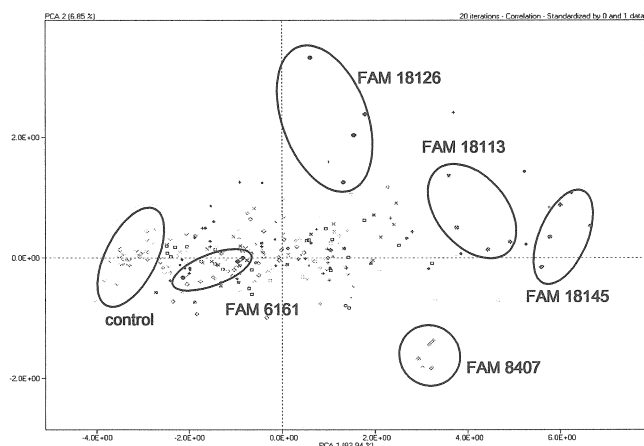


Fig. 1 Principal component analysis of headspace profiles of different *Lb. casei* strains measured by the electronic nose. Different *Lb. casei* strains were incubated in a buffer (pH 5.5) containing 2 mM leucine under aerobic and anaerobic conditions. For each strain replications were prepared. After 7 days the headspace was concentrated on an INDEX-needle (LDZ Switzerland) before injection into the electronic nose.

