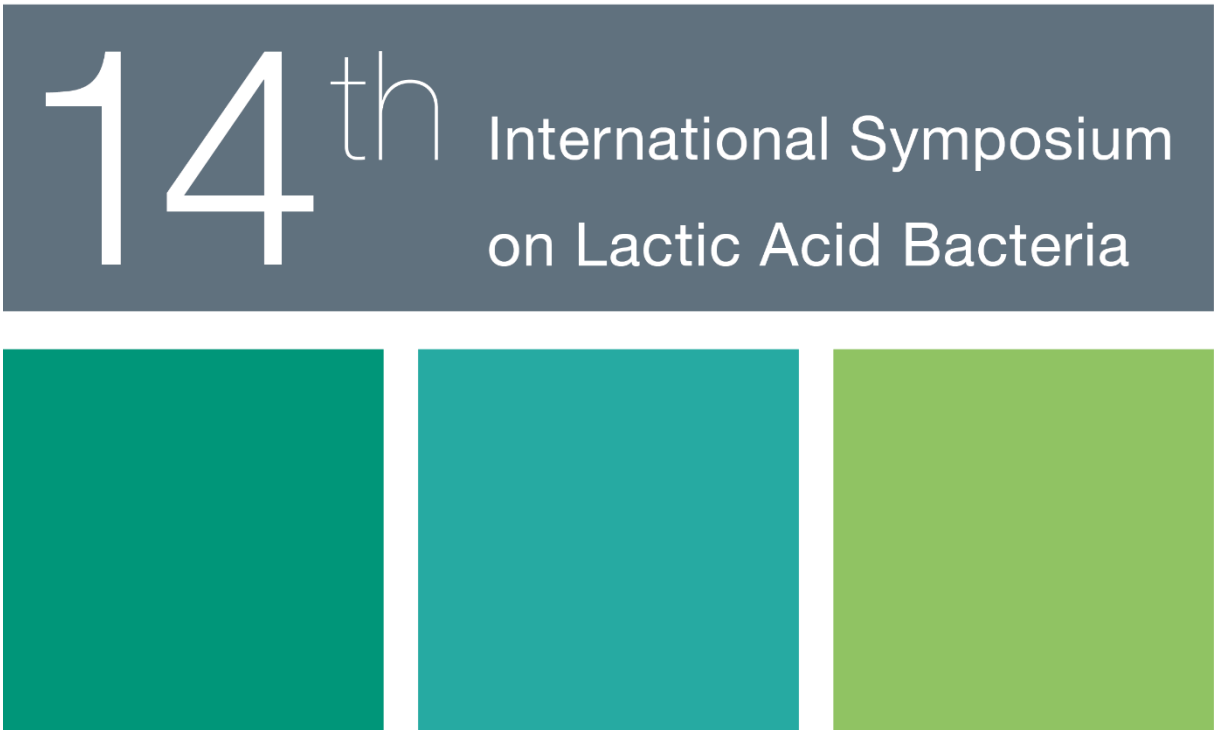
BOOK OF ABSTRACTS

14th Symposium on Lactic Acid Bacteria



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Effect of starter culture, fermentation and ripening on Gouda cheese flavour development in plant-protein based emulsions.

Judith C.M. Wolkers-Rooijackers[1], Isabel De Bie[1], Eddy J. Smid[1]
[1]*Wageningen University, Food Microbiology, Bornse Weilanden 9, 6708WG, Wageningen, the Netherlands*

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Themes
Fermentation and Metabolism, including protein transition

Abstract
Non-dairy cheese analogues (CA) that are commercially available are plant-based alternatives for cheese, usually made of vegetable oil, modified starch and various additives for flavour. The level of protein in these CA's is often low and to improve its nutritional value plant proteins could be used. The use of plant protein poses however some challenges such as the presence of off-flavours and their functionality in the matrix (such as the effect on texture).

In this study, different protein concentrates (pea, mung bean protein and casein), along with glucose, coconut oil and sodium citrate, were used to make an emulsion suitable for inoculation with lactic acid bacteria (LAB), both from plant en dairy origin and fermented for up to seven days. Strains were screened for their ability to reduce the pH of the matrix (<5) and to form a fermentation-induced gel.

Since the majority of flavours in traditional Gouda cheese are formed during ripening, LAB inoculated (pea and casein) protein-based matrices were stored at 13°C for up to 6 weeks to mimic Gouda cheese ripening conditions. Microbial and physical stability were tested over

time and after 6 weeks various physiochemical parameters were determined, like pH and volatile organic compound production.

In both fermented only and ripened samples, an increase in cheese-aroma's such as acetate, acetoin, butanediol, 3-methylbutanal and 3-methylbutanol during ripening was observed, as well as a decrease in off-flavours such as hexanal and 1-hexanol. LAB strains isolated from plant sources had on average the highest cheese aroma production.

Kewords
cheese analogue, plant-protein, LAB, fermentation, ripening, flavour