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BOOK OF ABSTRACTS

Fermented hybrid cheese: sustainable, tasty, and nutritious

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● Driven by global challenges linked to food production, there is growing interest for sustainable dairy alternatives. Although many plant-based dairy alternatives exists, they often lack taste and nutritional value. In particular, this is the case for existing cheese analogues, which generally lack proteins and are not fermented. This study explores the potential of fermentation of hybrid matrices, consisting of dairy and plant-based ingredients, to create more sustainable, tasty and nutritious cheese alternatives. Fermentation was chosen to improve the taste and nutritional value by reducing the plant-related off-flavours and anti-nutritional factors (ANFs) as well as produce desired flavours and improve digestibility. Hybrid Gouda and Camembert cheese analogues were developed by varying ratios of milk and pea protein as well as processing conditions aiming for optimal curd formation. Suitable starter cultures were selected based on acidification, microbial growth, flavour formation and off-flavour reduction. Interestingly, acidification by lactic acid bacteria (LAB) was improved in the dairy-pea hybrids compared to pure dairy and plant-based matrices. Moreover, fermentation by LAB and fungi reduced beany off-flavours and generated cheese-related flavours in particular during the ripening process. Notably, addition of pea protein significantly increased cheese yields and prevented moisture loss during ripening due to its high water-binding capacity. Furthermore, the protein content and digestibility significantly increased in the hybrid cheese compared to both dairy cheese and plant-based cheese analogues, and ripening contributing to this. Overall, this study demonstrates that fermentation and ripening of hybrid cheese matrices is a promising strategy to produce sustainable high-quality cheeses analogues.

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