

**SAFERMENT –  
Precision Fermentation as an Alternative and  
Safe Approach for the Production of Dairy Proteins**

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**Summary**

Dairy production provides highly nutritious proteins for food, but is associated to negative climate and environmental impacts and animal welfare issues. Precision fermentation is an alternative route to produce dairy proteins in an animal-free and more sustainable way, by making use of micro-organisms for the recombinant production of these proteins. It is important to identify and address potential food safety hazards in precision fermentation production chains, so they can be tackled in an early phase of product development. Hazards may arise from the use of (novel) production hosts and recombinant technologies, upstream and downstream processes or (bio)chemical aids. The SAFERMENT project aims to identify and analyse potential food safety hazards of dairy protein analogues produced using precision fermentation, from substrate to end-product and consumer. Addressed food safety aspects are: (1) allergenic properties of recombinant dairy proteins, (2) biochemical differences between recombinant and conventional dairy protein ingredients and their implications for food authentication, (3) absence of recombinant genetic material, (4) hazard identification and risk analysis in production chains of dairy protein analogues, and (5) consumer risk perception of dairy proteins derived from precision fermentation. Research approaches and preliminary outcomes of the SAFERMENT project are discussed in view of developing safe production chains for successful commercialization of cell-based dairy proteins as food ingredients.