

### Strategies for salt reduction in semi-hard cheese (foil-ripened Edam cheese)

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#### Introduction

According to the German National Consumption Survey II (2008), dairy products and cheese contribute most to the intake of sodium chloride along with meats, sausages and bread. A high intake of sodium is associated with a significantly higher risk of the development of cardiovascular diseases. Therefore, a reduction of sodium chloride in cheese is necessary. Since sodium chloride performs important functions especially in sensory quality and shelf life, a reduction is generally difficult to achieve.

#### Aim

Target was a sodium reduction in industrially produced foil-ripened Edam cheese to a maximum level of 0.4 g per 100 g cheese (corresponding to 1.0 g sodium chloride) without perceptible sensory deviations compared to cheese with regular sodium content.

#### Methods

First experiments were conducted at the pilot plants of the MRI. A special lab enzyme was used as well as particular starter cultures with enhanced aroma development. The focus was on the use of different sodium replacers for brining. After chemical and physical analysis as well as sensory evaluation, selected cheese trials were undertaken at the pilot plants of DMK under industrial conditions.

#### Results

In different test batches, the target value was reached by using sodium replacers and variation of brining time. However, sensory development was very different between test batches. Some cheeses were perceived as bitter, too low in saltiness or exhibiting off-flavors. Upscaling trials at DMK improved overall product quality and sensory perception of produced cheese. Consequently, it was more reliable to compare test cheeses to the benchmark of industrially produced Edam cheese with a common salt content.

#### Conclusion

By the experiments, further knowledge and experience in salt reduction could be acquired. Overall, sodium reduction in cheese remains challenging due to various functions of salt during cheese production and ripening.