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The effect of reduced sodium chloride content on the development of fluorescent *Pseudomonas* in a Reblochon-like cheese.

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Sodium reduction in the human diet is currently one of the main concerns for public health agencies and consequently, has become a challenge facing the food industries. One of the functions of sodium chloride during cheese transformation is the limitation of undesirable microorganisms development such as spoilage microbes. The impact of reduced sodium chloride content (75%) or its substitution by potassium chloride (75%/25%) in a Reblochon-like cheeses were compared with cheeses with usual NaCl content (100%, control cheeses), particularly regarding the development and the activity of fluorescent *Pseudomonas* (part of RedSel project). Analyzes included physico-chemical analyzes (pH, Aw, dosage of sugars and humidity, proteolysis and lipolysis indexes), microbial counts on specific media and 16S metabarcoding analysis.

Analyzes showed that the salt content of cheeses did not dramatically affect neither the main physico-chemical parameters of ripened cheeses, nor their microbial composition in bacteria, yeasts and molds (including starters and ripening microflora). However, microbial counts indicated higher growth of *Pseudomonas* strains in ripened cheeses produced with a reduced NaCl content (8.93 ± 0.36 log cfu/g) or with KCl (9.19 ± 0.25 log cfu/g) in substitution in comparison with control cheeses (8.24 ± 0.57 log cfu/g). The effect of salt contents on the growth of *Pseudomonas* strains in a synthetic medium was also studied. Our results showed that a reduction in the NaCl content increased growth rates of fluorescent *Pseudomonas*. 16S metabarcoding analysis of cheeses confirmed these results and also revealed that global microbial diversity was increased in presence of *Pseudomonas strains*. The growth of *P. fluorescens* led to an increase in cheese proteolysis and lipolysis.

In conclusion, cheese salt content does not appear to have strong impact on cheese quality with the exception of a higher development of *Pseudomonas*. A modification of the salt content in the cheeses then requires a preventive control of the spoilage flora.

Version déposée

Sodium reduction in the human diet is currently one of the main concerns for public health agencies and consequently, has become a challenge facing the food industries. One of the functions of sodium chloride during cheese transformation is the limitation of undesirable microorganisms development such as spoilage microbes.

The impact of reduced sodium chloride content (75%) or its substitution by potassium chloride (75%/25%) in a Reblochon-like cheeses were compared with cheeses with usual NaCl content (100%, control cheeses), particularly regarding the development and the activity of fluorescent *Pseudomonas* (part of RedSel project). Analyzes included physico-chemical analyzes (pH, Aw, dosage of sugars and humidity, proteolysis and lipolysis indexes), microbial counts on specific media and 16S metabarcoding analysis.

An higher growth of *Pseudomonas* was observed in ripened cheeses produced with a reduced NaCl content or with KCl in comparison with control cheeses. Growth of 5 strains in a synthetic medium with different salts content and 16S metabarcoding analyses confirmed these results. The growth of *Pseudomonas* led to an increase in cheese proteolysis and lipolysis.

A modification of the salt content in the cheeses requires a preventive control of the spoilage flora.