

## Challenge-testing Belgian artisanal cheeses for *Listeria monocytogenes*

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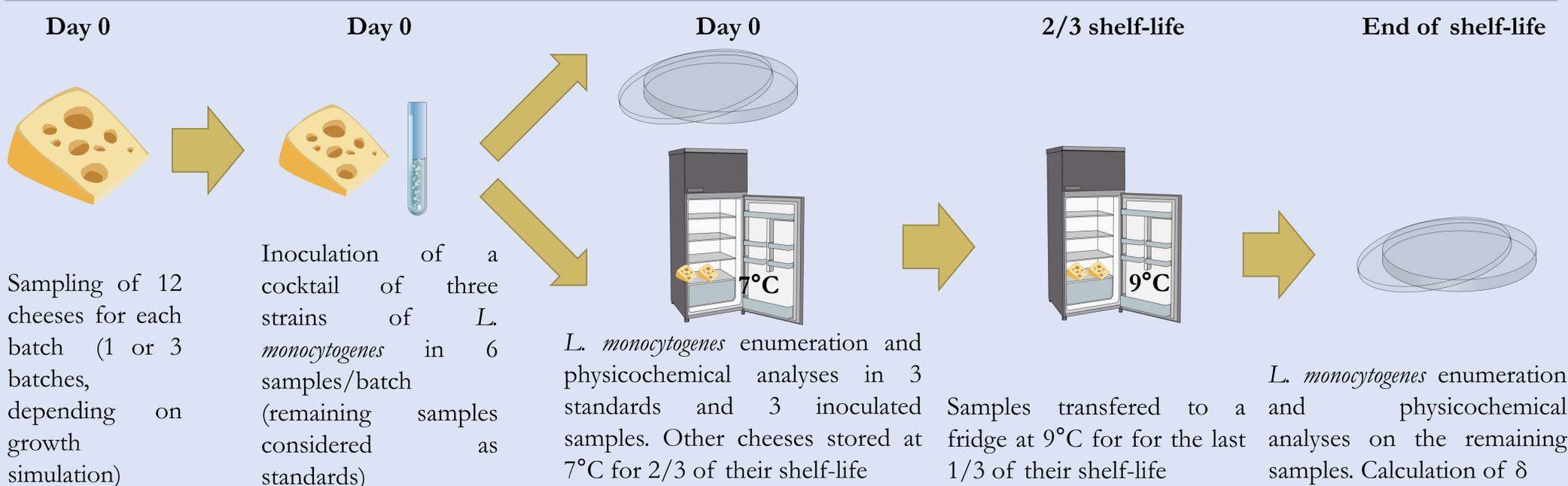
### INTRODUCTION

Numerous listeriosis outbreaks have been associated with cheese consumption in developed countries. Various types of cheese have been incriminated, including fresh cheeses and mold-ripened soft cheeses. As a consequence, the absence of *Listeria monocytogenes* in 25g of cheese allowing its growth is imposed by Regulation (CE) No 2073/2005. Three situations not allowing the growth of the pathogen have been identified: (a)  $\text{pH} \leq 4.4$ , (b)  $a_w \leq 0.92$ , and (c)  $\text{pH} \leq 5.0$  and  $a_w \leq 0.94$ . A pH or a  $a_w$  above these threshold values does not necessary mean that *L. monocytogenes* is able to grow. Challenge-test is a powerful tool allowing producers to understand the real fate of the pathogen in their cheeses.

### OBJECTIVES

The main goal was to perform challenge-tests in order to assess the growth potential ( $\delta$ ) of *L. monocytogenes* in Belgian artisanal cheese, and to identify safe products. Physicochemical characteristics of these products were also studied.

### METHODOLOGY



### RESULTS, DISCUSSION & PERSPECTIVES

Type of cheese	Number of challenge-tests	Number of positive $\delta$	pH range	$a_w$ range	Dry matter range (%)
Maquée	8	0/8	4.4 – 4.5	0.98 – 1.00	13.6 – 27.5
Moulded unripened cheeses	4	0/4	4.3 – 4.5	0.97 – 0.99	30.6 – 41.2
Mold-ripened soft cheeses	4	4/4	5.3 – 7.1	0.96 - 0.98	44.5 – 56.9
Smear-ripened soft cheeses	4	3/4	5.0 – 7.1	0.97 – 0.98	43.5 – 56.3
Semi-hard/hard cheeses	12	4/12	5.4 – 6.1	0.92 – 0.97	46.6 – 69.0

Fig. 1 – Results of the challenge-tests

#### No growth in unripened cheese

Although almost all unripened samples had  $\text{pH} > 4.4$ , it seems that *L. monocytogenes* is unable to grow in these cheeses. Federal Agency for the Safety of the Food Chain (FASFC) is currently evaluating the eventuality of a regulatory relaxation for acidic unripened cheeses.

#### Contrasted results for semi-hard/hard cheeses

Huge differences of  $\delta$  were observed between batches of a given cheese, like a  $\delta > 0$  for batch 1,  $\delta \approx 0$  for batch 2 and  $\delta < 0$  for batch 3. This observation remains unexplained, given that no significant differences in pH,  $a_w$ , dry matter or fat content were reported. However, all  $\delta$  were  $< 1 \log \text{cfu/g}$ . Further studies should be performed to understand this inter-batch variability.

#### 5 log cfu/g

The final contamination level for some mold- and smear-ripened soft cheeses. Globally, that kind of product could represent a major threat for food safety. One exception was observed for Herve cheese. An hypothesis is that the endogenous microflora of this product was particular. This idea is currently investigated.

### ACKNOWLEDGEMENTS

The authors would like to thank FASFC for raising the funds required to perform this study, as well as the technical staffs of Quali Partner and ILVO. Amaury Gérard is now the recipient of a fellowship (n°21563) from the Fonds pour la Formation à la Recherche dans l'Industrie et l'Agriculture (FRIA)