

**NF VALIDATION**  
**Validation of alternative analytical methods**  
*Application in food microbiology*

**Summary report**

Validation study according to the EN ISO 16140-2:2016

**CSD method**

(Certificate number: BKR 23/12 – 12/20)

**for the detection of *Cronobacter* spp. in infant formula and infant cereals with or without probiotics including ingredients and production environmental samples**

**Qualitative method**

<b>&gt; Expert Laboratory:</b>	<b>ADRIA</b> ZA Creac'h Gwen 29196 Quimper Cedex (France)
<b>&gt; For:</b>	<b>BIOKAR DIAGNOSTICS</b> (a part of SOLABIA S.A.S.) Zac Le Ther – Rue des 40 Mines BP10245 Allonne 60002 Beauvais Cedex (France)

This report consists of 84 pages, including 7 appendices.

Only copies including the totality of this report are authorised.

Competencies of the laboratory are certified by COFRAC accreditation for the analyses marked with the symbol♦.

Version 0  
October 15, 2024



<b>1</b>	<b>INTRODUCTION</b>	<b>5</b>
<b>2</b>	<b>METHOD PROTOCOLS</b>	<b>5</b>
<b>2.1</b>	<b>Alternative method</b>	<b>5</b>
2.1.1	<i>Principle</i>	5
2.1.2	<i>Protocol</i>	5
2.1.3	<i>Restrictions</i>	6
<b>2.2</b>	<b>Reference method</b>	<b>7</b>
<b>2.3</b>	<b>Study design</b>	<b>7</b>
<b>3</b>	<b>METHOD COMPARISON STUDY</b>	<b>7</b>
<b>3.1</b>	<b>Sensitivity study</b>	<b>7</b>
3.1.1	<i>Number and nature of samples</i>	7
3.1.2	<i>Artificial contamination of samples</i>	8
3.1.3	<i>Protocols applied during the validation study</i>	9
3.1.4	<i>Test results</i>	10
3.1.5	<i>Calculation of relative trueness (RT), sensitivity (SE) and false positive ratio (FPR)</i>	10
3.1.6	<i>Analysis of discordant results</i>	12
3.1.7	<i>Enrichment broth storage at 5 ± 3 °C for 72 h</i>	17
3.1.8	<i>Confirmation</i>	18
3.1.9	<i>Enrichment broths for acidifying products</i>	20
<b>3.2</b>	<b>Relative level of detection</b>	<b>20</b>
3.2.1	<i>Experimental design</i>	20
3.2.2	<i>Calculation and interpretation of the RLOD</i>	21
3.2.3	<i>Conclusion</i>	22
<b>3.3</b>	<b>Inclusivity / exclusivity</b>	<b>23</b>
3.3.1	<i>Test protocols</i>	23
3.3.2	<i>Results</i>	23

<b>4</b>	<b>INTER-LABORATORY STUDY</b>	<b>24</b>
4.1	Study organisation	24
4.2	Experimental parameters controls	25
4.2.1	Strain stability and background microflora stability	25
4.2.2	Contamination levels	26
4.2.3	Logistic conditions	26
4.3	Results analysis	27
4.3.1	Expert laboratory results	27
4.3.2	Results observed by the collaborative laboratories	28
4.3.3	Results of the collaborators retained for interpretation	30
4.4	Calculation and interpretation	31
4.4.1	Calculation of the specificity percentage (SP)	31
4.4.2	Calculation of the sensitivity ( $SE_{alt}$ ), the sensitivity for the reference method ( $SE_{ref}$ ), the relative trueness (RT) and the false positive ratio for the alternative method (FPR)	32
4.4.3	Interpretation of data	32
4.4.4	Evaluation of the LOD <sub>50%</sub> , LOD <sub>95%</sub> and RLOD between laboratories	36
<b>5</b>	<b>CONCLUSION</b>	<b>36</b>
>	Appendix 1 – Flow diagram of the alternative method: CSD method for the detection of <i>Cronobacter</i> spp.	38
>	Appendix 2 – Flow diagram of the reference method: ISO 22964 (2017) - Microbiology of the food chain - Horizontal method for the detection of <i>Cronobacter</i> spp.	39
>	Appendix 3 – Artificial contamination of samples	40
>	Appendix 4 – Sensitivity study: raw data	46
>	Appendix 5 – Relative level of detection study: raw data	62
>	Appendix 6 – Inclusivity and exclusivity study: raw data	65
>	Appendix 7 - Results obtained by the collaborative laboratories and the expert laboratory	69

Quality Assurance documents related to this study can be consulted upon request from **BIOKAR DIAGNOSTICS**.

The technical protocol and the result interpretation were carried out according to the EN ISO 16140-2:2016 and the AFNOR technical rules (Revision 12).

<b>Validation protocols</b>	<ul style="list-style-type: none"> <li>▪ ISO 16140-1 (2016): Microbiology of the food chain - Method validation — <i>Part 1: Vocabulary</i></li> <li>▪ ISO 16140-2 (2016): Microbiology of the food chain - Method validation — <i>Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method</i></li> <li>▪ AFNOR technical rules (Revision 12).</li> </ul>
<b>Reference method<sup>♦</sup></b>	ISO 22964 (2017) - Microbiology of the food chain - Horizontal method for the detection of <i>Cronobacter</i> spp.
<b>Alternative method</b>	<b>CSD method for the detection of <i>Cronobacter</i> spp.</b>
<b>Scope</b>	<ul style="list-style-type: none"> <li>&gt; Infant formula and infant cereals with or without probiotics including ingredients</li> <li>&gt; Production environmental samples</li> </ul>
<b>Certification organism</b>	AFNOR Certification ( <a href="http://nf-validation.afnor.org/">http://nf-validation.afnor.org/</a> )

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on [www.cofrac.fr](http://www.cofrac.fr))

## 1 INTRODUCTION

---

The CSD method for detection of *Cronobacter* spp. in infant formula and infant cereals with or without probiotics including ingredients (up to 50 g and 50 to 375 g test portions) and production environmental samples was validated in December 2020 (Certificate N° BKR 23/12 – 12/20) according to the ISO 16140-2 (2016).

The method was renewed in October 2024.

## 2 METHOD PROTOCOLS

---

### 2.1 Alternative method

The flow diagram of the alternative method is provided in **Appendix 1**.

#### 2.1.1 Principle

The CSD method principle is based on two steps:

- Enrichment in *Salmonella* Enrichissement broth supplemented with CSD supplement.
- Streaking onto CCI Agar plate which is based on an enzymatic activity characteristic of *Cronobacter* spp. 5-Bromo-4-chloro-3-indolyl- $\alpha$ -D-glucopyranoside. Chromogen substrate allows to distinguish *Cronobacter* spp. from the other *Enterobacteriaceae*. The typical colonies appear blue to blue-green.

#### 2.1.2 Protocol

Different enrichment protocols are available depending on the category and test portion.

Category	Test portion	Protocol
Infant formula and infant cereals with or without probiotics including ingredients	Up to 50 g	Up to 50 g + <i>Salmonella</i> Enrichissement broth+ CSD supplement (0.1 mL /g of matrix)* (d1/10) <b>16 to 22 h at 41.5°C ± 1°C</b>
	50 - 375 g	50 - 375 g + pre-warmed <i>Salmonella</i> Enrichissement broth + CSD supplement (0.1 mL /g of matrix)* (d1/4) <b>18 to 24 h at 41.5°C ± 1°C</b>
Production environmental samples	Up to 50 g or 50 mL	50 g or 50 mL + 450 mL <i>Salmonella</i> Enrichissement + supplement (0.1 mL /g matrix or 1 mL for 100 mL for surfaces analysis) Swab qsp 10 mL Sponge qsp 100 mL Wipe qsp 225 mL <b>16 - 22 h at 41.5°C ± 1°C</b>

\*Addition of  $\alpha$ -amylase for infant cereals (0.1 g/l)

- Direct streaking of 10 $\mu$ l enriched sample onto CCI Agar, incubation for 24 h  $\pm$  3 h at 41.5°C  $\pm$  1°C,
- *Cronobacter* spp. typical colonies are confirmed by biochemical gallery without purification step or with the tests described in the reference method.

It is possible to store the enrichment broths for 72 h at 5°C  $\pm$  3°C before streaking onto CCI Agar plates.

### 2.1.3 Restrictions

There is no restriction for use.

## 2.2 Reference method<sup>♦</sup>

The reference method corresponds to the EN ISO 22964 (2017) - Microbiology of the food chain - Horizontal method for the detection of *Cronobacter* spp. (See **Appendix 2**).

Note that, based on previous data, big sample sizes cannot be used in the reference method procedure due to the impact on the detection levels and the sensitivity performances. 10 g test portions were thus used for the reference method while 50 g or 375 g test portions were tested for the alternative method depending on the protocol tested.

## 2.3 Study design

The study is an **unpaired study design** as the reference and the alternative methods have different enrichment procedures.

# 3 METHOD COMPARISON STUDY

---

***The method comparison study is a study performed by the expert laboratory to compare the alternative method with the reference method.***

*The study was carried out on a diversity of samples and strains representative of agri-food products. This does not constitute an exhaustive list of the different matrices included in the scope.*

*For any comment on the alternative method, please contact AFNOR Certification at <http://nf-validation.afnor.org/contact-2/>.*

## 3.1 Sensitivity study

*The sensitivity (SE) is the ability of the method to detect the analyte by either the reference or alternative method.*

### 3.1.1 Number and nature of samples

225 samples were tested providing 102 positive and 123 negative samples.

The distribution per tested type and test portion is given in **Table 1**.

---

<sup>♦</sup> Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on [www.cofrac.fr](http://www.cofrac.fr))

**Table 1 – Distribution per tested category and type**

Categories		Sample size	Types	Positive samples	Negative samples	Total	
1	Infant formula and infant cereals with and without probiotics including ingredients	Up to 50 g	a	Infant formula and infant cereals without probiotics	12	13	25
			b	Infant formula and infant cereals with probiotics	15	7	22
			c	Ingredients	8	15	23
			<i>Total</i>		35	35	70
		50 - 375 g	a	Infant formula and infant cereals without probiotics	14	9	23
			b	Infant formula and infant cereals with probiotics	8	14	22
			c	Ingredients	13	19	32
			<i>Total</i>		35	42	77
2	Production environmental samples	Surfaces or up to 50 g or 50 mL	a	Surface sampling	12	14	26
			b	Process water and rinse water	7	20	27
			c	Dusts, residues, water of siphon	13	12	25
			<i>Total</i>		32	46	78
			<b>All samples</b>			<b>102</b>	<b>123</b>

### 3.1.2 Artificial contamination of samples

Artificial contaminations were done by seeding and spiking protocols. The artificial contaminations are presented in **Appendix 3**.

9.8 % of the samples were inoculated between 3 (seeding protocol) or 5 (spiking protocol) and 10 CFU, this is in agreement with the AFNOR technical rules.

The repartition of the positive samples per inoculation protocol and inoculation level is given in **Table 2**.

**Table 2 - Repartition of the positive samples per inoculation protocol and inoculation level**

Category	Naturally contaminated	Artificially contaminated				Total
		Seeding protocol		Spiking protocol		
		$\leq 3$ CFU	$3 < x \leq 10$ CFU	$\leq 5$ CFU	$5 < x \leq 10$ CFU	
All samples	4	88	5	5	0	102
%	3,9	86,3	4,9	4,9	0,0	100,0

4 naturally contaminated samples were tested and concern two different infant cereals without probiotics (samples 2511 and 2640) and two different vacuum dusts from dairy products industry (samples n°4278 and 4281).

**3.9 % of the samples were naturally contaminated.**



### 3.1.3 Protocols applied during the validation study

#### > **Test portion**

Different test portions were analysed for the CSD and the ISO 22964 methods:

- Reference method: 10 g
- CSD method:
  - Category 1: 50 g and 375 g,
  - Category 2: surface or 50 g or 50 mL

#### > **Enrichment broth**

For the category 1, for acidifying products (ex: probiotics containing products), 50% of samples were tested with *Salmonella* Enrichissement Broth + CSD supplement and 50% with *Salmonella* Enrichissement broth 2X + CSD supplement as both enrichment broths can be used for such matrices.

#### > **Incubation time**

The following incubation times were applied:

- Category 1:
  - 50 g test portion: 16 h at  $41.5 \pm 1^\circ\text{C}$ ,
  - 375 g test portion: 18h at  $41.5 \pm 1^\circ\text{C}$
  - CCI Agar: 21 h at  $41.5 \pm 1^\circ\text{C}$ .
- Category 2:
  - Surface or 50 g or 50 mL: 16 h at  $41.5 \pm 1^\circ\text{C}$ ,
  - CCI Agar: 21 h at  $41.5 \pm 1^\circ\text{C}$ .

#### > **Confirmation**

*Cronobacter* spp. typical colonies were confirmed by biochemical gallery (API ID32E) without purification step or with the tests described in the reference method (purification step onto TSA, oxidase and biochemical gallery (API ID32E)).

The negative samples were confirmed using the protocol of the reference method: subculture in CSB for 24 h  $\pm$  2 h at 41.5  $\pm$  1°C before streaking onto CCI Agar incubated for 24 h  $\pm$  2 h at 41.5  $\pm$  1°C (ISO 16140-2:2016 requirements).

> **Enrichment broth storage for 72 h at 5°C  $\pm$  3°C**

All enrichment broths from the positive and discordant samples were tested again after 72 h storage at 5  $\pm$  3°C.

> **Lactic bacteria enumeration**

For the category 1, for probiotics containing products, lactic bacteria enumeration was carried out using MRS pH 5.7 incubated in anaerobic conditions for 72 h at 30  $\pm$  1°C (ISO 15214).

### 3.1.4 Test results

Raw data are given in **Appendix 4**. The results combining all studies are given in **Table 3**.

**Table 3 – Interpretation of sample results between the reference and alternative method (based on the confirmed alternative method results)**

Categories		Sample size	PA	NA*	PD	ND**	PPND	PPNA	Total
1	Infant formula and infant cereals with and without probiotics including ingredients	Up to 50 g	16	35	12	7	0	0	70
		50 - 375 g	22	42	6	7	0	0	77
2	Production environmental samples	Surfaces or up to 50 g or 50 mL	17	46	6	9	0	0	78
<b>All samples</b>			<b>55</b>	<b>123</b>	<b>24</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>225</b>

\* PPNA not included

\*\* PPND not included

### 3.1.5 Calculation of relative trueness (RT), sensitivity (SE) and false positive ratio (FPR)

The calculations are presented in **Table 4**.

**Table 4 – Calculation of the relative trueness (RT), the sensitivity (SE) and the false positive ratio (FPR)**

Categories		Sample size	Types	PA	NA*	PD	ND**	PPND	PPNA	SE alt %	SE ref %	RT %	FPR %	
1	Infant formula and infant cereals with and without probiotics including ingredients	Up to 50 g	a	Infant formula and infant cereals without probiotics	3	13	5	4	0	0	66,7	58,3	64,0	0,0
			b	Infant formula and infant cereals with probiotics	9	7	5	1	0	0	93,3	66,7	72,7	0,0
			c	Ingredients	4	15	2	2	0	0	75,0	75,0	82,6	0,0
			<i>Total</i>		16	35	12	7	0	0	80,0	65,7	72,9	0,0
		50 - 375 g	a	Infant formula and infant cereals without probiotics	8	9	5	1	0	0	92,9	64,3	73,9	0,0
			b	Infant formula and infant cereals with probiotics	5	14	0	3	0	0	62,5	100,0	86,4	0,0
			c	Ingredients	9	19	1	3	0	0	76,9	92,3	87,5	0,0
			<i>Total</i>		22	42	6	7	0	0	80,0	82,9	83,1	0,0
2	Production environmental samples	Surfaces or up to 50 g or 50 mL	a	Surface sampling	7	14	3	2	0	0	83,3	75,0	80,8	0,0
			b	Process water and rinse water	4	20	0	3	0	0	57,1	100,0	88,9	0,0
			c	Dusts, residues, water of siphon	6	12	3	4	0	0	69,2	76,9	72,0	0,0
			<i>Total</i>		17	46	6	9	0	0	71,9	81,3	80,8	0,0
<b>All samples</b>				<b>55</b>	<b>123</b>	<b>24</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>77,5</b>	<b>76,5</b>	<b>79,1</b>	<b>0,0</b>	

\* PPNA not included

\*\* PPND not included

A summary of the results is given in **Table 5**.

**Table 5 - Summary of results**

		Category 1		Category 2	All samples
		Up to 50 g	50 – 375 g		
Sensitivity for the alternative method	$SE_{alt} = \frac{(PA + PD)}{(PA + ND + PD)} \times 100\%$	80.0 %	80.0 %	71.9 %	77.5 %
Sensitivity for the reference method	$SE_{ref} = \frac{(PA + ND)}{(PA + ND + PD)} \times 100\%$	65.7 %	82.9 %	81.3 %	76.5 %
Relative trueness	$RT = \frac{(PA + NA)}{N} \times 100\%$	72.9 %	83.1 %	80.8 %	79.1 %
False positive ratio for the alternative method* FP = PPNA + PPND	$FPR = \frac{(FP)}{NA} \times 100\%$	0.0 %	0.0 %	0.0 %	0.0 %

With  $ND = ND + PPND$   
 $NA = NA + PPNA$

### 3.1.6 Analysis of discordant results

The negative deviations for all studies are given in **Table 6** and the positive deviations in **Table 7**.

For both categories combined, 23 negative deviations were observed: 14 (7 for each sample size) for the category 1 and 9 for the category 2. All the samples were artificially contaminated. For two dusts samples (n°4274 and 4435) the complementary tests of the reference method (subculture in CSB) allowed to recover the *Cronobacter* spp. strains. For these samples the inoculation was done using the spiking protocol (heat treatment of the strain suspension before inoculation).

Combining the two tested categories, 24 positive deviations were observed: 18 (12 for 50 g test portion and 6 for 375 g test portion) for category 1 and 6 for category 2. Four samples were naturally contaminated samples (n°2511 and 2640: infant cereals without probiotics and n°4278 and 4281: vacuum dusts from dairy products industry).

Note that for one sample in negative agreement (NA) (4436: vacuum dusts) *Cronobacter* spp. was isolated from the enrichment broth after subculture in CSB.

**Table 6 - Negative deviations**

Year of analysis	Sample N°	Product	Artificial contamination		Reference method: ISO 22964♦	Alternative method: CSD method					Test portion (g)	Category	Type
						CCI Agar	Negative samples ISO 16140-2 subculture CSB+CCI	All confirmatory tests	Final result	Agreement			
			Typical colonies										
2020	1958	Infant formula (stage 2) (26,6% FL)	<i>C. dublinensis</i> DSM18705	0,4	+	st	-	-	-	ND	50	1	a
2020	1959	Infant formula premium (stage 2) (21,8% FL)	<i>C. dublinensis</i> DSM18705	0,4	+	st	-	-	-	ND	50	1	a
2020	2505	Infant cereals without gluten + 4 months	<i>C. sakazakii</i> Ad2848	0,5	+	-	-	-	-	ND	50	1	a
2020	2509	Organic infant cereals 7 cereals +6 months	<i>C. sakazakii</i> Ad2849	3,4	+	st	-	-	-	ND	50	1	a
2020	2253	Infant cereals with probiotics milk chocolate and biscuit ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	<i>C. sakazakii</i> Ad1813	0,3	+	st	-	-	-	ND	50	1	b
2020	2144	Milk protein isolate	<i>C. sakazakii</i> Ad1446	1,1	+	st	-	-	-	ND	50	1	c
2020	2146	Whey	<i>C. sakazakii</i> Ad829	0,6	+	st	-	-	-	ND	50	1	c
2020	3021	Follow up infant formula(21,0%FL)	<i>C. turicensis</i> Ad1445	0,6	+	st	-	-	-	ND	375	1	a
2020	376	Infant formula with probiotics stage 2 ( <i>L. reuteri</i> 1,2.10 <sup>6</sup> CFU/g) (20,2%FL)	<i>C. sakazakii</i> Ad1418	2,4	+	st	-	-	-	ND	375	1	b
2020	2909	Infant formula without oil palm (stage 1) with probiotics ( <i>L. reuteri</i> 3,7.10 <sup>6</sup> CFU/g) (27,6%FL)	<i>C. sakazakii</i> Ad2913	4,2	+	st	-	-	-	ND	375	1	b
2020	2910	Infant formula with lactic ferments with probiotics ( <i>L. reuteri</i> and <i>S. thermophilus</i> 5.10 <sup>5</sup> CFU/g) (28,6%FL)	<i>C. sakazakii</i> Ad2913	4,2	+	-	-	-	-	ND	375	1	b
2020	2429	Whey	<i>C. sakazakii</i> Ad1446	0,2	+	st	-	-	-	ND	375	1	c
2020	2430	Maltodextrin	<i>C. sakazakii</i> Ad1446	0,2	+	st	-	-	-	ND	375	1	c

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on [www.cofrac.fr](http://www.cofrac.fr))

Year of analysis	Sample N°	Product	Artificial contamination		Reference method: ISO 22964 <sup>♦</sup>	Alternative method: CSD method					Test portion (g)	Category	Type	
			Strain	Inoculation level (CFU/test portion)		CCI Agar	Negative samples ISO 16140-2 subculture CSB+CCI	All confirmatory tests	Final result	Agreement				
						Typical colonies								
2020	2431	Whey permeat	<i>C. sakazakii</i> Ad829	0,4	+	st	-	-	-	-	ND	375	1	c
2020	3750	Sponge before cleaning, utensils (poultry ham production)	<i>C. condimenti</i> LMG 2650T	1,8	+	-	-	-	-	-	ND	Surface	2	a
2020	3861	Sponge, scale after cleaning (ice cream production)	<i>C. sakazakii</i> Ad2404	1,6	+	st	-	-	-	-	ND	Surface	2	a
2020	3466	Rinse water after stripping (goat farm)	<i>C. dublinensis</i> LMG 23823T	1,2	+	-	-	-	-	-	ND	50 mL	2	b
2020	3467	Rinse water after stripping (goat farm)	<i>C. sakazakii</i> Ad2360	1,4	+	-	-	-	-	-	ND	50 mL	2	b
2020	3759	Process water, poultry slicing (poultry ham production)	<i>C. condimenti</i> LMG 2650T	1,8	+	-	-	-	-	-	ND	50 mL	2	b
2020	3470	Waste beef slicing (meat product industry)	<i>C. sakazakii</i> SU12-7	1,2	+	-	-	-	-	-	ND	50 g	2	c
2020	3472	Waste veal meat (meat product industry)	<i>C. sakazakii</i> SU12-7	1,2	+	-	-	-	-	-	ND	50 g	2	c
2020	4274	Vacuum dusts, serum (dairy product industry)	<i>C. sakazakii</i> Ad2387	0,8	+	-	+m ( <i>Cronobacter</i> spp.)	+	-	-	ND	50 g	2	c
2020	4435	Serum dusts (sieve chute) (dairy product industry)	<i>C. sakazakii</i> Ad2393	2,4	+	st	+p ( <i>Cronobacter</i> spp.)	+	-	-	ND	50 g	2	c

%FL: percentage of fat level

Table 7 - Positive deviations

Year of analysis	Sample N°	Product	Artificial contamination		Reference method: ISO 22964 ♦	Alternative method: CSD method			Test portion (g)	Category	Type	
			Strain	Inoculation (CFU/ test portion)		CCI Agar (10µl) - 21h at 41.5°C ± 1°C		Final result				Agreement
				Mean		Typical colonies	Confirmation					
2020	1960	Infant formula (stage 2) (24% FL)	<i>C. sakazakii</i> Ad2413	0,5	-	+p	+	+	PD	50	1	a
2020	2506	Infant cereals corn	<i>C. sakazakii</i> Ad2848	0,5	-	+p	+	+	PD	50	1	a
2020	2507	Organic infant cereals	<i>C. sakazakii</i> Ad2848	0,5	-	+p	+	+	PD	50	1	a
2020	2508	Organic infant cereals oat and wheat	<i>C. sakazakii</i> Ad2849	3,4	-	+p	+	+	PD	50	1	a
2020	2511	Infant cereals without gluten +4months	/	/	-	+M	+	+	PD	50	1	a
2020	2241	Infant cereals with probiotics oat and wheat +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	<i>C. sakazakii</i> Ad1430	0,6	-	+p	+	+	PD	50	1	b
2020	2242	Infant cereals with probiotics 5 cereals +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	<i>C. sakazakii</i> Ad1430	0,6	-	+p	+	+	PD	50	1	b
2020	2244	Infant cereals with probiotics vanilla +10 months ( <i>B. lactis</i> 1,6.10 <sup>5</sup> CFU/g)	<i>C. sakazakii</i> Ad1430	0,6	-	+p	+	+	PD	50	1	b
2020	2246	Infant formula with probiotics 6-12 months ( <i>B. lactis</i> 5,2.10 <sup>6</sup> CFU/g) (23,9%FL)	<i>C. sakazakii</i> Ad916	1,2	-	+p	+	+	PD	50	1	b
2020	2248	Infant formula with probiotics 6 months ( <i>Lactobacillus fermentum</i> 2,3.10 <sup>6</sup> CFU/g) (22%FL)	<i>C. sakazakii</i> Ad916	1,2	-	+p	+	+	PD	50	1	b
2020	2147	Maltodextrin	<i>C. sakazakii</i> Ad829	0,6	-	+p	+	+	PD	50	1	c
2020	2789	Corn starch	<i>C. sakazakii</i> Ad2849	2,3	-	+p	+	+	PD	50	1	c
2020	370	Infant formula stage 2, 6-12 months (20,4%FL)	<i>C. sakazakii</i> Ad2412	3,0	-	+p	+	+	PD	375	1	a
2020	2640	Infant multi-cereals	/	/	-	+Md	+	+	PD	375	1	a
2020	2646	Infant cereals growth, vanilla	<i>C. sakazakii</i> Ad2848	1,4	-	+m	+	+	PD	375	1	a
2020	2647	Infant cereals baby, buns and chocolates chips	<i>C. sakazakii</i> Ad2848	1,4	-	+M	+	+	PD	375	1	a
2020	2648	Infant cereals 7 cereals and banana	<i>C. sakazakii</i> Ad2848	1,4	-	+M	+	+	PD	375	1	a
2020	2433	Native starch	<i>C. sakazakii</i> Ad829	0,4	-	+p	+	+	PD	375	1	c

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on [www.cofrac.fr](http://www.cofrac.fr))

Year of analysis	Sample N°	Product	Artificial contamination		Reference method: ISO 22964 <sup>♦</sup>	Alternative method: CSD method			Test portion (g)	Category	Type	
			Strain	Inoculation (CFU/ test portion)		CCI Agar (10µl) - 21h at 41.5°C ± 1°C		Final result				Agreement
						Typical colonies	Confirmation					
2020	3457	Wipe during stripping 4 before cleaning (goat farm)	<i>C. sakazakii</i> Ad2381	1	-	+p	+	+	PD	Surface	2	a
2020	3458	Sponge before cleaning, work zone (dairy product industry)	<i>C. sakazakii</i> Ad831	0,4	-	+1/2	+	+	PD	Surface	2	a
2020	3751	Sponge before cleaning, worktable (poultry ham production)	<i>C. condimenti</i> LMG 2650T	1,8	-	+p	+	+	PD	Surface	2	a
2020	3468	Waste pork meat (meat products industry)	<i>C. sakazakii</i> SU12-7	1,2	-	+m	+	+	PD	50	2	c
2020	4278	Vacuum dusts, serum powder (dairy product industry)	/	/	-	+d(2)	+	+	PD	50	2	c
2020	4281	Vacuum dusts (dairy product industry)	/	/	-	+d(6)	+	+	PD	50	2	c

%FL: percentage of fat level



The analyses of discordant results according to the EN ISO 16140-2:2016 is the following (See **Table 8**):

**Table 8 - Analyses of discordant results**

Categories	Test portion	Types	N+	ND**	PPND	PD	Unpaired		
							(ND+PPND)-PD	AL	
1	Up to 50 g	a	Infant formula and infant cereals without probiotics	12	4	0	5		
		b	Infant formula and infant cereals with probiotics	15	1	0	5		
		c	Ingredients	8	2	0	2		
		Total		35	7	0	12		
	50 - 375 g	a	Infant formula and infant cereals without probiotics	14	1	0	5		
		b	Infant formula and infant cereals with probiotics	8	3	0	0		
		c	Ingredients	13	3	0	1		
		Total		35	7	0	6		
2	Surfaces or up to 50 g or 50 mL	a	Surface sampling	12	2	0	3		
		b	Process water and rinse water	7	3	0	0		
		c	Dusts, residues, water of siphon	13	4	0	3		
		Total		32	9	0	6		
All samples			102	23	0	24	-1	4	

\*\* PPND not included

The observed values for ((ND+PPND)-PD) meet the acceptability limit for each test portion, for each individual category, and for both combined test portions and categories (calculated values  $\leq$  AL).

### 3.1.7 Enrichment broth storage at $5 \pm 3$ °C for 72 h

The enrichment broths from 103 samples were tested again after storage for 72 h at  $5 \pm 3$ °C. Only one change was observed (See **Table 9**).

**Table 9 - Enrichment broth storage**

Year of analysis	Sample N°	Product	Agreement before storage	Agreement after storage	Test portion	Type
2020	2254	Infant cereals with probiotics honey and biscuit ( <i>Bifidobacterium infantis</i> + <i>Lactobacillus rhamnosus</i> 1,0.10 <sup>5</sup> CFU/g)	PA	ND	50	b

The analyses of discordant results become (See **Table 10**).

**Table 10 - Analysis of discordant after storage for 72 h at  $5 \pm 3^\circ\text{C}$**

Categories		Test portion	Types		N+	ND**	PPND	PD	Unpaired	
									(ND+PPND)-PD	AL
1	Infant formula and infant cereals with and without probiotics including ingredients	Up to 50 g	a	Infant formula and infant cereals without probiotics	12	4	0	5		
			b	Infant formula and infant cereals with probiotics	15	2	0	5		
			c	Ingredients	8	2	0	2		
			Total		35	8	0	12		
		50 - 375 g	a	Infant formula and infant cereals without probiotics	14	1	0	5		
			b	Infant formula and infant cereals with probiotics	8	3	0	0		
			c	Ingredients	13	3	0	1		
			Total		35	7	0	6		
2	Production environmental samples	Surfaces or up to 50 g or 50 mL	a	Surface sampling	12	2	0	3		
			b	Process water and rinse water	7	3	0	0		
			c	Dusts, residues, water of siphon	13	4	0	3		
			Total		32	9	0	6		
All samples					102	24	0	24	0	4

\*\* PPND not included

The observed values for ((ND+PPND)-PD) meet the acceptability limit for each sample size, each category and for all the combined sample sizes and categories (calculated values  $\leq$  AL).

### 3.1.8 Confirmation

During the validation, the typical colonies were confirmed by biochemical galleries (API ID32E) without purification step and with the tests described in the reference method (purification step onto TSA, oxidase and biochemical gallery (API ID32E)).

Both confirmation procedures allowed to confirm all the samples even the samples which shown doubtful colonies onto CCI Agar plates (See **Table 11**).

**Table 11 – Confirmed samples with doubtful colonies**

Year of analysis	Sample N°	Product	Alternative method: CSD method										Category	Type
			CCI Agar (10 µl) – 21 h at 41.5 ± 1°C					After storage enrichment broth 72 h at 5 ± 3°C						
			Typical colonies	Confirmation			Final result	Typical colonies	Confirmation			Final result 72 h		
				Without purification	With purification ISO 22964 tests				Without purification	With purification ISO 22964 tests				
API ID32 E	Oxidase	API ID32 E		API ID32 E	Oxidase									
2020	2640	Infant cereals multi-cereals	+Md	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	+	+p	<i>Cronobacter spp.</i>	-	+	1	a	
2020	<b>2798</b>	<b>Whey</b>	+Md	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	+	+M	<i>Cronobacter spp.</i>	-	+	1	c	
2020	<b>4276</b>	<b>Vacuum dusts, tower serum (dairy product industry)</b>	+md	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	+	+mdni/+	<i>Cronobacter spp.</i>	-	+	2	c	
2020	4278	Vacuum dusts, serum powder (dairy product industry)	+d(2)	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	+	+mdni/+	<i>Cronobacter spp.</i>	-	+	2	c	
2020	4281	Vacuum dusts (dairy product industry)	+d(6)	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	+	+mdni/+	<i>Cronobacter spp.</i>	-	+	2	c	

### 3.1.9 Enrichment broths for acidifying products

Acidifying products (probiotics containing products) were tested with either *Salmonella* Enrichissement broth or *Salmonella* Enrichissement broth 2X.

54.5 % of the samples with probiotics were tested with *Salmonella* Enrichissement broth and 45.5 % with *Salmonella* Enrichissement 2X broth.

The repartition of the samples per test portion and enrichment broth used is given **Table 12**.

**Table 12 – Repartition of the samples per test portion and enrichment broth**

Product	Test portion	Samples tested with <i>Salmonella</i> Enrichissement				Samples tested with <i>Salmonella</i> Enrichissement 2X				Total	
		Number of positive samples	Number of negative samples	Total	%	Number of positive samples	Number of negative samples	Total	%	Number of samples	%
Infant formula or infant cereals with or without probiotics	50 g	10	2	12	54,5	5	5	10	45,5	22	100
	375 g	8	4	12	54,5	0	10	10	45,5	22	100

## 3.2 Relative level of detection

The relative level of detection is the level of detection at  $P = 0.50$  ( $LOD_{50}$ ) of the alternative (proprietary) method divided by the level of detection at  $P = 0.50$  ( $LOD_{50}$ ) of the reference method.

The RLOD is defined as the ratio of the alternative and reference methods:

$$RLOD = \frac{LOD_{Alt.}}{LOD_{Ref.}}$$

The relative detection level is the smallest number of culturable micro-organisms that can be detected in the sample in 50% of occasions by the alternative and reference methods.

### 3.2.1 Experimental design

Three (matrix/strain) pairs were analysed by the reference method and by the alternative method (See **Table 13**).

The following protocol was applied:

- A negative control: 5 samples,
- A low contamination level providing fractional recovery data, with 20 replicates,
- A high contamination level, with 5 replicates.

For the category 1, a lactic flora enumeration on each matrix was performed to estimate the total microbial load on the day of analysis.

For the category 2, a total plate count determination was performed to estimate the total microbial load on the day of analysis.

**Table 13 - Defined (matrix/strain) pairs for the RLOD determination**

Category	Test portion	Type	Matrix	Strain	Origin	Inoculation and storage condition	Enrichment broth	
1	Infant formula and infant cereals with or without probiotics including ingredients	50 g	Infant formula and infant cereals with probiotics	Infant cereals with probiotics	<i>Cronobacter sakazakii</i> Ad2849	Infant cereals	Lyophilized strain 2 weeks at ambient temperature	<i>Salmonella</i> Enrichissement broth + CSD supplement (0.1 mL/g) + $\alpha$ -amylase g/L) d 1/10
		375 g	Infant formula and infant cereals with probiotics	Infant formula with probiotics	<i>Cronobacter sakazakii</i> Ad2412	Infant milk powder	Lyophilized strain 2 weeks at ambient temperature	Pre-warmed <i>Salmonella</i> Enrichissement 2 X + CSD supplement (0.1 mL/g) + Tween 80 (10 g/L) d 1/4
2	Production environmental samples	50 mL	Water process	Water process	<i>Cronobacter muytjensii</i> E888	Milk powder	48h at 3°C $\pm$ 2°C	<i>Salmonella</i> Enrichissement broth + CSD Supplement (0.1 mL/g)

### 3.2.2 Calculation and interpretation of the RLOD

The raw data for the extension production environmental samples study are given in **Appendix 5**.

The RLOD calculations were performed using the Excel spreadsheet available at <http://standards.iso.org/iso/16140> - RLOD (clause 5-1-4-2 Calculation and interpretation of RLOD) version 15.08.2015. The RLOD are given **Table 14**.

**Table 14 – Presentation of RLOD before and after confirmation of the alternative method results**

Category	Alternative method test portion	Name (strain / matrix pair)	Study design	AL	RLOD	RLODL	RLODU	b=ln (RLOD)	sd(b)	z-Test statistic	p-value
1	50 g	Infant cereals with probiotics / <i>C. sakazakii</i> Ad2849	Unpaired	2,5	0,748	0,338	1,655	-0,29	0,397	0,731	1,535
	375 g	Infant formula with probiotics / <i>C. sakazakii</i> Ad2412	Unpaired	2,5	0,762	0,306	1,898	-0,272	0,457	0,596	1,449
2	50 mL	Process water (ice cream) / <i>C. muytjensii</i> E888	Unpaired	2,5	1,146	0,498	2,636	0,136	0,417	0,327	0,744
<b>Combined (all matrix/strain pairs)</b>			<b>Unpaired</b>	<b>2,5</b>	<b>0,876</b>	<b>0,554</b>	<b>1,385</b>	<b>-0,132</b>	<b>0,229</b>	<b>0,578</b>	<b>1,437</b>

The LOD<sub>50</sub> % calculations according to Wilrich & Wilrich POD-LOD calculation program - version 12, 2024-03-05 are given in **Table 15**.

**Table 15 - LOD<sub>50</sub> results**

Category	Alternative method test portion	Strain / matrix pair	Level of detection at 50% (CFU / test portion) according to Wilrich & Wilrich) <sup>1</sup>	
			Reference method	Alternative method
1	50 g	Infant cereals with probiotics / <i>C. sakazakii</i> Ad2849	0,5 [0,3-0,8]	0,3 [0,2-0,6]
	375 g	Infant formula with probiotics / <i>C. sakazakii</i> Ad2412	0,5 [0,3-1,0]	0,4 [0,2-0,8]
2	50 mL	Process water (ice cream) / <i>C. muytjensii</i> E888	0,9 [0,5-1,6]	0,9 [0,5-1,6]
<b>Combined (all matrix/strain pairs)</b>			<b>0,6 [0,5-0,9]</b>	<b>0,6 [0,4-0,8]</b>

### 3.2.3 Conclusion

The RLOD values (using the confirmed alternative method results) meet the acceptability limit of 2.5 for unpaired studies, for the three matrix/strain pairs tested.

The LOD<sub>50</sub> varies from 0.5 to 0.9 CFU/test portion for the reference method and varies from 0.3 to 0.9 CFU/ test portion for the alternative method.

<sup>1</sup> Wilrich, C., and P.-Th. Wilrich: Estimation of the POD function and the LOD of a qualitative microbiological measurement method. AOAC International **92** (2009) 1763 - 1772.

### 3.3 Inclusivity / exclusivity

The inclusivity is the ability of the alternative method to detect the target analyte from a wide range of strains. The exclusivity is the lack of interference from a relevant range of non-target strains of the alternative method.

#### 3.3.1 Test protocols

##### > Inclusivity

50 *Cronobacter* spp. strains cultures were enriched in BHI medium at 37°C. Dilutions were done in order to inoculate 10 – 100 cells/450 mL of *Salmonella* Enrichissement broth + CSD supplement for 16 h at 41.5 ± 1°C.

The enriched broths were streaked onto CCI Agar plates (21 h at 41.5 ± 1°C), the colonies were identified by ID32E biochemical galleries.

##### > Exclusivity

30 negative strains cultures were performed in BHI at 37°C. Dilutions were realized in order to inoculate 10<sup>5</sup> cells/mL of BPW. The BPW was then incubated for 24 hours at 37°C.

The enriched broths were streaked onto CCI Agar plates (21 h at 41.5 ± 1°C).

#### 3.3.2 Results

Raw data are given in **Appendix 6**.

##### > Inclusivity

The 50 target strains gave typical colonies onto CCI Agar plates.

All the typical colonies were confirmed as *Cronobacter* spp by biochemical gallery without purification step.

##### > Exclusivity

Among the 30 non-target strains tested, 28 showed no growth (4 strains) or non-typical colonies on CCI Agar plates (24 strains).

2 strains gave typical colonies onto CCI Agar plates with negative confirmation tests: *Enterobacter helveticus* DSM 18396T and *Escherichia vulneris* Ad2853, they were both identified as *Escherichia vulneris* using the biochemical galleries. The same results were observed when the selective enrichment broth was used (*Salmonella* Enrichissement + CSD supplement).

## 4 INTER-LABORATORY STUDY

---

*The inter-laboratory study is a study performed by multiple laboratories testing identical samples at the same time, the results of which are used to estimate alternative-method performance parameters.*

### 4.1 Study organisation

#### > Collaborators number

Samples were sent to 15 laboratories.

#### > Matrix and strain used

Infant formula with probiotics (*Lactobacillus reuteri*) was inoculated with *Cronobacter sakazakii* Ad940 strain.

In order to facilitate the study, infant formula was first reconstituted in sterile water before shipment to collaborators. Samples of 25ml (alternative) and 10ml were sent to collaborators.

#### > Samples

Samples were prepared and inoculated on Monday 12<sup>th</sup> October 2020, as described below:

- 24 blind coded samples (25 mL) for *Cronobacter* spp. detection by the CSD *Cronobacter* spp. method (RED LABEL),
- 24 blind coded samples (10 mL) for *Cronobacter* spp. detection by the ISO 22964 (April 2017) reference method (BLUE LABEL),
- 1 sample (10 mL) (labelled "Sample for lactic acid bacteria enumeration") for mesophilic lactic acid bacteria enumeration in MRS agar (pH 5,7),
- 1 water flask labelled "Temperature Control" with a temperature probe, which must be incubated simultaneously with the samples during storage.



### > *Inoculation*

The targeted inoculation levels were the following:

- Level: 0 CFU/25 mL
- Level 1: 0.7 CFU/sample (10 or 25 mL)
- Level 2: 7 CFU/sample (10 or 25 mL).

### > *Labelling and shipping*

Blind coded samples were placed in isothermal boxes, which contained cooling blocks, and express-shipped to the different laboratories.

A temperature control flask containing a sensor was added to the package in order to register the temperature profile during the transport, the package delivery and storage until analyses.

Samples were shipped in 24 h to 48 h to the involved laboratories. The temperature conditions had to stay lower or equal to 8°C during transport, and between 0°C – 8°C in the labs.

### > *Analyses*

Collaborative study laboratories and the expert laboratory carried out the analyses on Tuesday 13<sup>th</sup> October 2020 or Wednesday 14<sup>th</sup> October 2020 with the alternative and reference methods. **The analyses by the reference method and the alternative method were performed on the same day.**

## 4.2 Experimental parameters controls

### 4.2.1 *Strain stability and background microflora stability*

Strain stability was checked by inoculating the matrix at 0.7 CFU/sample (detection) and  $1.10^3$  CFU/g (enumeration). Enumerations were performed for the high contamination level and detection analyses were performed for the low contamination level after 24 h and 48 h storage at  $3 \pm 2^\circ\text{C}$ . *Triplicates* were analysed. The lactic flora was also enumerated; the results are given in Table 16.

**Table 16 - Sample stability**

Day	Reference method (detection)			Enumeration (CFU/g)			Lactic flora (CFU/g)
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3	
Day 0	+	+	+	1400	2100	1500	7,0.10 <sup>5</sup>
Day 1	+	+	-	630	640	660	9,0.10 <sup>5</sup>
Day 2	-	+	-	160	180	110	6,0.10 <sup>5</sup>
Day 3	-	-	-	91	91	64	3,9.10 <sup>5</sup>

A decrease of around 1.3 log was observed during storage at  $5 \pm 3^{\circ}\text{C}$  for 3 days. All samples (3) gave *Cronobacter* spp. positive results with the reference method the day of inoculation while all the samples gave negative results after 3 days storage. The lactic flora enumeration was relatively stable until 3 days storage.

#### 4.2.2 Contamination levels

The contamination levels and the sample codification were the following (see Table 17).

**Table 17 - Contamination levels**

Level	Samples	Theoretical target level (CFU/test portion)	True level (CFU/ test portion)	Low limit (CFU/test portion)	High limit (CFU/test portion)
0	1-5-8-10-11-15-19-23	0	/	/	/
1	4-6-7-13-14-20-22-24	0,7	0,7	0,5	1,0
2	2-3-9-12-16-17-18-21	7	8,1	6,5	10,1

#### 4.2.3 Logistic conditions

Temperature conditions are given in Table 18.

**Table 18 - Sample temperatures at receipt**

Laboratory	Temperature measured by the probe (°C)	Temperature measured at receipt (°C)	Receipt date and time		Analysis date	
A	<i>Not received</i>	5,3	12/10/2020	14:30:00	13/10/2020	9:30 AM
B	6	7,7	13/10/2020	15:15:00	13/10/2020	03:30 PM
C	2	4,8	13/10/2020	10:00 AM	13/10/2020	04:00 PM
D	2,5	2,8	14/10/2020	8:40 AM	14/10/2020	10:20 AM
E	3	7	14/10/2020	13:30:00	14/10/2020	02:00 PM
F	2	3,2	14/10/2020	10:15 AM	14/10/2020	10:30 AM
G	3	3,9	15/10/2020	12:35:00	15/10/2020	06:00 PM
H	<i>Probe discarded</i>	5	13/10/2020	11:00 AM	14/10/2020	01:00 PM
I	2	4,1	13/10/2020	10:30 AM	13/10/2020	04:30 PM
J	2	5,1	13/10/200	10:30 AM	13/10/2020	10:45 AM
K	1	2,9	13/10/2020	09:35:00	14/10/2020	02:00 PM
L	2	4,4	13/10/2020	14:00:00	14/10/2020	10:50 AM
M	1	1,2	13/10/2020	08:15	13/10/2020	04:30 PM
N	2	5,7	13/10/2020	8:35 AM	13/10/2020	11:00 AM
O	1,5	3,8	13/10/2020	11:00 AM	13/10/2020	03:00 PM

No problem was encountered during the transport or at receipt for the 14 collaborators. All the samples were delivered on time and in appropriate conditions except for collaborator G who received the package at day 3 (Thursday 15 October 2020). The result from this collaborator shall be excluded.

Temperature during shipment and at receipt were all correct. For collaborator A, the probe has not been received and collaborator H lost its probe. For these two collaborators, the temperature measured at receipt by the labs were correct.

### 4.3 Results analysis

The raw data are given in **Appendix 7**.

#### 4.3.1 Expert laboratory results

The results obtained by the expert laboratory are given in **Table 19**.

**Table 19 – Results obtained by the expert Lab.**

Level	Reference method	Alternative method
L0	0/8	0/8
L1	3/8	3/8
L2	8/8	8/8

The same results were observed by the reference and the alternative methods with fractional positive results for level 1 (37.5 %).

#### 4.3.2 Results observed by the collaborative laboratories

##### > *Lactic flora enumeration*

Depending on the Lab results, the enumeration levels of the lactic flora varied from  $5.3 \cdot 10^5$  to  $> 3 \cdot 10^7$  CFU/g.

##### > *Cronobacter spp detection*

15 laboratories participated to the study. The results obtained are provided in Table 20 (reference method) and Table 21 (alternative method).

**Table 20 - Positive results by the reference method (ALL the collaborators)**

Collaborators	Contamination level		
	L0	L1	L2
A	0	6	8
B	0	2	8
C	0	4	8
D	0	5	8
E	0	4	8
F	1	3	8
G	0	3	8
H	0	2	8
I	1	6	8
J	0	5	8
K	0	2	8
L	0	3	8
M	0	4	8
N	0	4	8
O	0	5	8
<b>Total</b>	<b>CP<sub>0</sub> = 2</b>	<b>CP<sub>1</sub> = 58</b>	<b>CP<sub>2</sub> = 120</b>

**Table 21 - Positive results (before and after confirmation) by the alternative method (ALL the collaborators)**

Collaborators	Contamination level								
	L0			L1			L2		
	Plate reading	Confirmation result	Final result	Plate reading	Confirmation result	Final result	Plate reading	Confirmation result	Final result
A	0	0	0	5	5	5	8	8	8
B	0	0	0	3	3	3	8	8	8
C	0	0	0	2	2	2	8	8	8
D	0	0	0	3	3	3	8	8	8
E	0	0	0	2	2	2	8	8	8
F	0	0	0	4	4	4	8	8	8
G	0	0	0	3	3	3	8	8	8
H	0	0	0	4	4	4	8	8	8
I	0	0	0	4	4	4	8	8	8
J	0	0	0	4	4	4	8	8	8
K	0	0	0	4	4	4	8	8	8
L	0	0	0	5	5	5	8	8	8
M	0	0	0	4	4	4	8	8	8
N	0	0	0	5	5	5	8	8	8
O	0	0	0	1	1	1	8	8	8
<b>Total</b>	<b>P<sub>0</sub> = 0</b>	<b>C<sub>0</sub> = 0</b>	<b>CP<sub>0</sub> = 0</b>	<b>P<sub>1</sub> = 53</b>	<b>C<sub>1</sub> = 53</b>	<b>CP<sub>1</sub> = 53</b>	<b>P<sub>2</sub> = 120</b>	<b>C<sub>2</sub> = 120</b>	<b>CP<sub>2</sub> = 120</b>

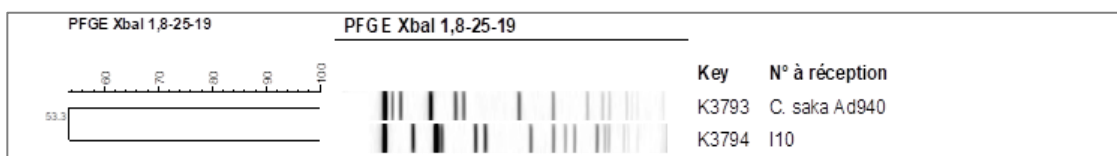
Two collaborators obtained one positive result on unspiked sample for the reference method:

- collaborator F: sample F15
- collaborator I: sample I10

The typical colonies onto CCI Agar plate were confirmed as *Cronobacter* spp. by biochemical gallery (API ID 32E) for these two samples.

It was asked to these labs to send to ADRIA the plates with typical colonies for the unspiked samples, only the plate from collaborator I was received.

A fingerprint using XbaI restriction enzyme was run on the strain isolated on the plate in order to compare its profile of the inoculated strain (Ad940). The following results were observed (See **Figure 1**).

**Figure 1 – Fingerprinting**

The strain isolated from sample I10 was not the same as the strain inoculated.

According to the AFNOR technical rules, it is possible to include the results from a collaborator with maximum one cross contamination at Level 0. So, the results for the collaborators F and I were taken into account for the interpretation.

Only the results from the collaborators G, which carried out the analyses at day 3, were excluded for interpretation.

#### 4.3.3 Results of the collaborators retained for interpretation

The results obtained with the 14 labs kept for interpretation are presented in Table 22 (reference method) and Table 23 (alternative method).

**Table 22 - Positive results by the reference method (Without Lab G)**

Collaborators	Contamination level		
	L0	L1	L2
A	0	6	8
B	0	2	8
C	0	4	8
D	0	5	8
E	0	4	8
F	1	3	8
H	0	2	8
I	1	6	8
J	0	5	8
K	0	2	8
L	0	3	8
M	0	4	8
N	0	4	8
O	0	5	8
<b>Total</b>	<b>CP<sub>0</sub> = 2</b>	<b>CP<sub>1</sub> = 55</b>	<b>CP<sub>2</sub> = 112</b>

**Table 23 - Positive results (before and after confirmation)  
by the alternative method (Without Lab G)**

Collaborators	Contamination level								
	L0			L1			L2		
	Plate reading	Confirmation result	Final result	Plate reading	Confirmation result	Final result	Plate reading	Confirmation result	Final result
A	0	0	0	5	5	5	8	8	8
B	0	0	0	3	3	3	8	8	8
C	0	0	0	2	2	2	8	8	8
D	0	0	0	3	3	3	8	8	8
E	0	0	0	2	2	2	8	8	8
F	0	0	0	4	4	4	8	8	8
H	0	0	0	4	4	4	8	8	8
I	0	0	0	4	4	4	8	8	8
J	0	0	0	4	4	4	8	8	8
K	0	0	0	4	4	4	8	8	8
L	0	0	0	5	5	5	8	8	8
M	0	0	0	4	4	4	8	8	8
N	0	0	0	5	5	5	8	8	8
O	0	0	0	1	1	1	8	8	8
<b>Total</b>	<b>P<sub>0</sub> = 0</b>	<b>C<sub>0</sub> = 0</b>	<b>CP<sub>0</sub> = 0</b>	<b>P<sub>1</sub> = 50</b>	<b>C<sub>1</sub> = 50</b>	<b>CP<sub>1</sub> = 50</b>	<b>P<sub>2</sub> = 112</b>	<b>C<sub>2</sub> = 112</b>	<b>CP<sub>2</sub> = 112</b>

#### 4.4 Calculation and interpretation

##### 4.4.1 Calculation of the specificity percentage (SP)

The percentage specificities (SP) of the reference method and of the alternative method, using the data after confirmation, based on the results of level L0 are the following (See Table 24).

**Table 24 - Percentage specificity**

Specificity for the reference method	$SP_{ref} = \left(1 - \left(\frac{P_0}{N_-}\right)\right) \times 100 \% =$	98.2 %
Specificity for the alternative method	$SP_{alt} = \left(1 - \left(\frac{CP_0}{N_-}\right)\right) \times 100 \% =$	100.0 %

N: number of all L0 tests

P<sub>0</sub> = total number of false-positive results obtained with the blank samples before confirmation

CP<sub>0</sub> = total number of false-positive results obtained with the blank samples

#### 4.4.2 Calculation of the sensitivity ( $SE_{alt}$ ), the sensitivity for the reference method ( $SE_{ref}$ ), the relative trueness (RT) and the false positive ratio for the alternative method (FPR)

Fractional positive results were obtained for the level L1. Respectively 49.1 % and 44.6 % of positive samples for the reference and the alternative methods. This inoculation level was retained for calculation.

A summary of the results of the collaborators retained for interpretation and obtained with the reference and the alternative methods for Level 1 is provided in Table 25.

**Table 25 - Summary of the obtained results with the reference method and the alternative method for Level 1**

Level	Response	Reference method positive (R+)	Reference method negative (R-)
1	Alternative method positive (A+)	Positive agreement (A+/R+) PA = 25	Positive deviation (R-/A+) PD = 25
	Alternative method negative (A-)	Negative deviation (A-/R+) ND = 30 (PPND = 0)	Negative agreement (A-/R-) NA = 32 (PPNA = 0)

Based on the data summarized in **Table 25**, the values of sensitivity of the alternative and reference methods, as well as the relative trueness and false positive ratio for the alternative method taking account the confirmations, are the following (See **Table 26**).

**Table 26 - Sensitivity, relative trueness and false positive ratio percentages**

		Level 1
Sensitivity for the alternative method:	$SE_{alt} = \frac{(PA+PD)}{(PA+PD+ND)} \times 100\% =$	62.5 %
Sensitivity for the reference method:	$SE_{ref} = \frac{(PA+ND)}{(PA+PD+ND)} \times 100\% =$	68.8 %
Relative trueness	$RT = \frac{(PA+NA)}{N} \times 100\% =$	50.9 %
False positive ratio for the alternative method	$FPR = \frac{FP}{NA} \times 100\% =$	0.0 %

#### 4.4.3 Interpretation of data

The negative deviations are listed in Table 27 for Level 1.

The positive deviations are listed in Table 28 for Level 1.



Table 27 - Negative deviations for Level 1

Collaborators	Sample No	CSD <i>Cronobacter</i> spp.		
		CCI		Final result
		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)	
A	6	-	/	-
B	4	-	/	-
	6	-	/	-
C	6	-	/	-
	7	-	/	-
	22	-	/	-
D	6	-	/	-
	22	-	/	-
	24	-	/	-
E	13	-	/	-
	14	-	/	-
F	6	-	/	-
	7	-	/	-
	14	-	/	-
G	4	-	/	-
H	24	-	/	-
I	4	-	/	-
	6	-	/	-
	22	-	/	-
J	4	-	/	-
	14	-	/	-
L	20	-	/	-
M	7	-	/	-
	24	-	/	-
N	14	-	/	-
	24	-	/	-
O	4	-	/	-
	6	-	/	-
	7	-	/	-
	14	-	/	-
	20	-	/	-
P	13	-	/	-
	24	-	/	-

Table 28 - Positive deviations for Level 1

Collaborators	Sample No	CSD <i>Cronobacter</i> spp.		
		CCI		Final result
		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)	
B	7	+	<i>Cronobacter</i> spp.	+
	14	+	<i>Cronobacter</i> spp.	+
	24	+	<i>Cronobacter</i> spp.	+
C	4	+	<i>Cronobacter</i> spp.	+
D	14	+	<i>Cronobacter</i> spp.	+
F	4	+	<i>Cronobacter</i> spp.	+
	13	+	<i>Cronobacter</i> spp.	+
	22	+	<i>Cronobacter</i> spp.	+
	24	+	<i>Cronobacter</i> spp.	+
G	20	+	<i>Cronobacter</i> spp.	+
H	4	+	<i>Cronobacter</i> spp.	+
	6	+	<i>Cronobacter</i> spp.	+
	20	+	<i>Cronobacter</i> spp.	+
I	7	+	<i>Cronobacter</i> spp.	+
J	20	+	<i>Cronobacter</i> spp.	+
K	14	+	<i>Cronobacter</i> spp.	+
	22	+	<i>Cronobacter</i> spp.	+
L	6	+	<i>Cronobacter</i> spp.	+
	7	+	<i>Cronobacter</i> spp.	+
	22	+	<i>Cronobacter</i> spp.	+
M	6	+	<i>Cronobacter</i> spp.	+
	14	+	<i>Cronobacter</i> spp.	+
N	6	+	<i>Cronobacter</i> spp.	+
	13	+	<i>Cronobacter</i> spp.	+
	20	+	<i>Cronobacter</i> spp.	+
O	22	+	<i>Cronobacter</i> spp.	+
P	6	+	<i>Cronobacter</i> spp.	+
	22	+	<i>Cronobacter</i> spp.	+

For an **unpaired study design**, the difference between (ND – PD) is calculated for the level(s) where fractional recovery is obtained (so  $L_1$  for this study). The observed value found for (ND – PD) shall not be higher than the AL. The AL is defined as [(ND – PD)<sub>max</sub>] and calculated per level where fractional recovery is obtained as described below using the following three parameters:

$$(p+)_{\text{ref}} = \frac{P_x}{N_x}$$

where

$P_x$  = number of samples with a positive result obtained with the reference method at level  $x$  ( $L_1$  or  $L_2$ ) for all the collaborators

$N_x$  = number of samples tested at level  $x$  ( $L_1$  or  $L_2$ ) with the reference method by all the collaborators

$$(p+)_{\text{alt}} = \frac{CP_x}{N_x}$$

where

$CP_x$  = number of samples with a confirmed positive result obtained with the alternative method at level  $x$  ( $L_1$  or  $L_2$ ) for all the collaborators;

$N_x$  = number of samples tested at level  $x$  ( $L_1$  or  $L_2$ ) with the alternative method by all the collaborators.

$$(ND-PD)_{\max} = \sqrt{3N_x \times ((p+)_{\text{ref}} + (p+)_{\text{alt}} - 2((p+)_{\text{ref}} \times (p+)_{\text{alt}}))}$$

where

$N_x$  = number of samples tested for level  $x$  ( $L_1$  or  $L_2$ ) with the reference method by all the collaborators.

The AL is not met when the observed value is higher than the AL. When the AL is not met, investigations should be made (e.g. root cause analysis) in order to provide an explanation of the observed results. Based on the AL and the additional information, it is decided whether the alternative method is regarded as not fit for purpose. The reasons for acceptance of the alternative method when the AL is not met shall be stated in the study report.

In this study, fractional recovery was observed at Level 1. The calculations are the following, according to the EN ISO 16140-2:2016 (See Table 29).

**Table 29 - Calculations**

	Level 1
$N_x$	112
$(p+)_{\text{ref}}$	0.5
$(p+)_{\text{alt}}$	0.4
AL = (ND - PD) max	12.95
ND - PD	5
Conclusion	ND-PD < AL

**The ISO 16140-2 (2016) requirements are fulfilled as (ND - PD) meet the AL.**

#### 4.4.4 Evaluation of the LOD<sub>50%</sub>, LOD<sub>95%</sub> and RLOD between laboratories

The RLOD was calculated using the EN ISO 16140-2:2016 Excel spreadsheet available at [https://standards.iso.org/iso/16140/-5/ed-1/en/RLOD\\_inter-lab-study\\_16140-2\\_AnnexF\\_ver1\\_28-06-2017.xls](https://standards.iso.org/iso/16140/-5/ed-1/en/RLOD_inter-lab-study_16140-2_AnnexF_ver1_28-06-2017.xls). The results are used only for information (see Table 30).

**Table 30 - LOD<sub>50%</sub>, LOD<sub>95%</sub> and RLOD**

Method	LOD 50%	LOD 95%	RLOD
Reference	0.7 [0.6;1.0]	3.2 [2.4;4.2]	1.1 [0.8;1.6]
Alternative	0.8 [0.6;1.1]	3.6 [2.7;4.8]	

## 5 CONCLUSION

The **method comparison study conclusions** are:

- The method comparison study scheme corresponds to an UNPAIRED STUDY design as the alternative and reference methods have different enrichment procedures.
- In the sensitivity study, two categories were tested:
  - Infant formula and infant cereals with or without probiotics including ingredients with two test portions (50 g and 375 g),
  - Production environmental samples.

The protocol of the alternative method shows 18 positive deviations (PD) and 14 negative deviations (ND) for both test portions. The ((ND+PPND)-PD) meet the acceptability limits (AL) for each test portion as well as for both test portions combined.
- The Relative Levels of Detection (RLOD) are all below the AL fixed at 2.5 for the unpaired data study whatever the matrix/strain pairs tested.
- The inclusivity and exclusivity testing gave the expected results for the 50 target strains and 28 non target strains. Two non-target strains (*E. helveticus* DSM 18396T and *E. vulneris* Ad2853) which shown typical colonies on CCI Agar were confirmed negative using the biochemical galleries.
- It is possible to store the enrichment broth for 72 h at 5 ± 3°C.

- The alternative method allows to obtain the negative samples in two days.
- The alternative method fulfils all the EN ISO 16140-2:2016 and AFNOR technical rules (Revision 12).

The **inter-laboratory study conclusions** are:

- The data and interpretations comply with the EN ISO 16140-2:2016 requirements. **The CSD method is considered equivalent to the ISO standard.**

Quimper, 15 October 2024

Astrid CARIOU

Manager

Method performance in food microbiology



I hereby attest to the validation of the verification of the conformity of the report (opinion and interpretation).

**Appendix 1 – Flow diagram of the alternative method:  
CSD method for the detection of *Cronobacter spp.***

**Food samples:**

**Up to 50 g test portion**

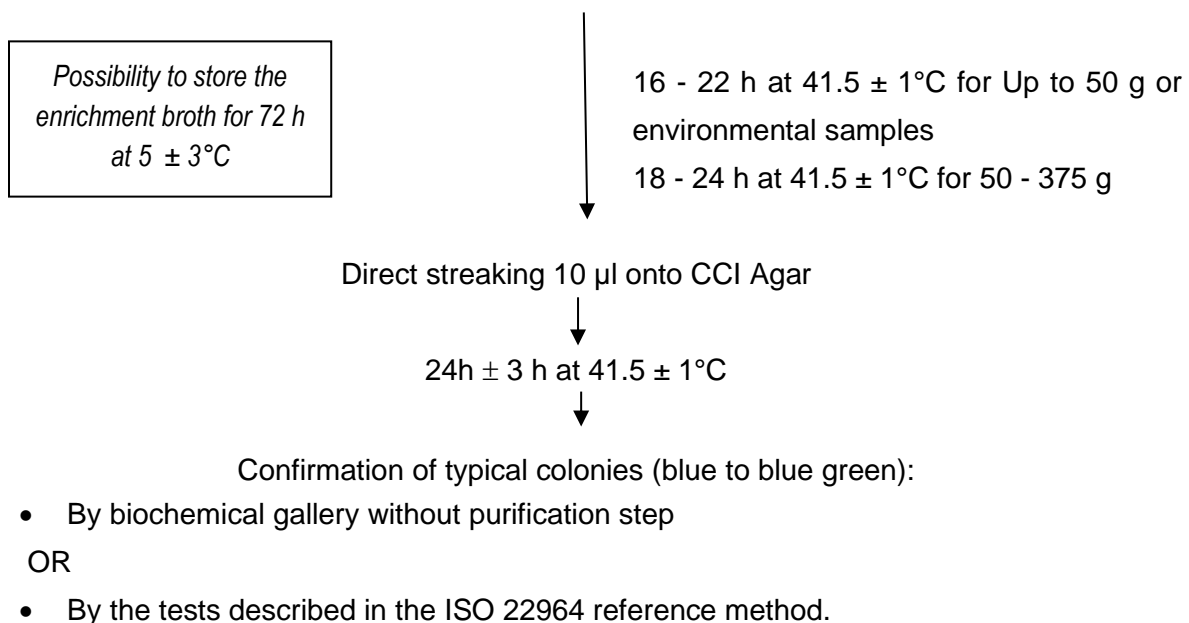
- + *Salmonella* Enrichissement broth (d 1/10)
- + CSD supplement (0.1 mL/g of matrix)

**50-375 g test portion**

- + Pre-warmed *Salmonella* Enrichissement broth at  $41.5 \pm 1^\circ\text{C}$  (d ¼)
- + CSD supplement (0.1 mL/g of matrix)
- Or specific enrichment according to the ISO 6887 parts:
  - Addition of  $\alpha$ -amylase for infant cereals 0.1 g/L
  - Addition of Tween for products with a fat level (FL) > 20%
  - Possibility of using *Salmonella* Enrichissement broth or *Salmonella* Enrichissement broth 2X for acidifying products (ex: probiotics containing products)

**Production environmental samples<sup>2</sup>:**

- **Up to 50 g or 50 mL** + *Salmonella* Enrichissement broth + CSD supplement (d 1/10)
- **1 swab** qsp 10 mL *Salmonella* Enrichissement broth + 0,1 mL CSD supplement
- **1 sponge** qsp 100 mL *Salmonella* Enrichissement broth + 1 mL CSD supplement
- **1 wipe** qsp 225 mL *Salmonella* Enrichissement broth + 2,25 mL CSD supplement



<sup>2</sup> For surface samples after cleaning procedure

- 1 swab + 1 mL universal neutralizing broth + 9 mL *Salmonella* enrichment broth + 0.1 mL CSD supplement
- 1 sponge + 10 mL universal neutralizing broth + 90 mL *Salmonella* enrichment broth + 1 mL CSD supplement
- 1 wipe + EPT + 10 % neutralizing agent + up 225 mL *Salmonella* enrichment broth + 2.25 mL CSD supplement

**Appendix 2 – Flow diagram of the reference method: ISO 22964 (2017) - Microbiology of the food chain - Horizontal method for the detection of *Cronobacter* spp.**

**Food products:**

10 g + 90 mL BPW or specific enrichment according to the ISO 6887 parts:

- Addition of  $\alpha$ -amylase for infant cereals 0,1 g/L
- Addition of Tween for products with a fat level (FL) > 20%
- Using of BPW 2X for acidifying products (ex: probiotics containing products)

**Production environmental samples:**

10 g + 90 mL BPW <sup>3</sup>

1 swab qsp 10 mL BPW

1 sponge qsp 100 mL BPW

1 wipe qsp 225 mL BPW

↓

Incubation 18 h ± 2 h

at 34 - 38°C

↓

0.1 mL + 10 mL CSB

↓

Incubation 24 h ± 2 h

at 41.5 ± 1°C

↓

Direct streaking onto CCI Agar

↓

Incubation 24 h ± 2 h

at 41.5 ± 1°C

↓

Confirmatory test on one typical colony (blue to blue green), and four other colonies (if the first one is negative)

↓

Streaking onto non-selective agar plate

↓

Incubation 18 h - 24 h

at 37 ± 1°C

↓

Biochemical confirmation (biochemical galleries)

<sup>3</sup> For surface samples after cleaning procedure

- 1 swab + 1 mL universal neutralizing broth+ 9 mL BPW broth
- 1 sponge + 10 mL universal neutralizing broth +90 mL BPW broth
- 1 wipe + BPW + 10 % neutralizing agent (up 225 mL BPW broth)

Appendix 3 – Artificial contamination of samples

FL: fat level  
 NFDM: non-fat dry milk

Year of analysis	Sample №	Product	Product (French name)	Artificial contaminations					Global result	Test portion (g)	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level CFU/sample Mean				
2020	1957	Organic infant formula (stage 1) (26% FL)	Poudre de lait infantiles 1er âge bio (26% MG)	<i>C. dublinensis</i> DSM18705	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	-	50	1	a
2020	1958	Infant formula (stage 2) (26,6% FL)	Poudre de lait infantiles 2ème âge (26,6% MG)	<i>C. dublinensis</i> DSM18705	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	+	50	1	a
2020	1959	Infant formula premium (stage 2) (21,8% FL)	Poudre de lait infantiles premium 2ème âge (21,8% MG)	<i>C. dublinensis</i> DSM18705	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	+	50	1	a
2020	1960	Infant formula (stage 2) (24% FL)	Poudre de lait infantiles 2ème âge (24% MG)	<i>C. sakazakii</i> Ad2413	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	1961	Infant formula (stage 1) (24,7% FL)	Poudre de lait infantiles 1er âge (24,7% MG)	<i>C. sakazakii</i> Ad2413	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	1962	Infant formula (6-12 months) (23% FL)	Poudre de lait infantiles bio 6-12 mois (23% MG)	<i>C. sakazakii</i> Ad2413	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	2505	Infant cereals without gluten +4 months	Mes premières céréales sans gluten dès 4 mois	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	2506	Infant cereals corn	Céréales infantiles 1ères maïs	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	2507	Organic infant cereals	Céréales infantiles bio nature	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	50	1	a
2020	2508	Organic infant cereals oat and wheat	Céréales infantiles bio blé et avoine	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	3,4	+	50	1	a
2020	2509	Organic infant cereals 7 cereals +6 months	Céréales infantiles récoltes bio 7 céréales dès 6 mois	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	3,4	+	50	1	a
2020	2510	Infant cereals 4-6 months	Mes premières céréales dès 4-6 mois	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	3,4	+	50	1	a
2020	370	Infant formula stage 2, 6-12 months (20,4%FL)	Poudre de lait infantile, 2ème âge 6-12 mois, pre-complex (20,4%MG)	<i>C. sakazakii</i> Ad2412	Poudre de lait	Seeding lyophilized strain 2 weeks at room temperature	/	3,0	+	375	1	a
2020	372	Infant cereals, multi cereals, 6months	Céréales infantiles, multi-céréales dès 6 mois	<i>C. sakazakii</i> Ad2848	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	2,4	+	375	1	a
2020	373	Infant cereals, biscuit, 6months	Céréales infantiles, saveur biscuit dès 6 mois	<i>C. sakazakii</i> Ad2849	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	3,0	+	375	1	a
2020	2646	Infant cereals growth, vanilla	Céréales infantiles croissance vanille gourmande	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	1,4	+	375	1	a
2020	2647	Infant cereals baby, buns and chocolates chips	Céréales infantiles junior saveur briochée pépites	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	1,4	+	375	1	a
2020	2648	Infant cereals 7 cereals and banana	Céréales infantiles 7 céréales et banane	<i>C. sakazakii</i> Ad2848	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	1,4	+	375	1	a
2020	2649	Infant formula stage 2 (23,6%FL)	Poudre de lait infantiles 2ème âge (23,6%MG)	<i>C. sakazakii</i> Ad935	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	375	1	a
2020	2650	Organic infant formula (22,9%FL)	Poudre de lait infantiles lait de suite les récoltes bio (22,9%MG)	<i>C. sakazakii</i> Ad935	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,5	+	375	1	a
2020	3017	Infant formula stage 2 (22,0%FL)	Poudre de lait infantile 2ème âge, fibres, vitamines, DHA (22,0%MG)	<i>C. turicensis</i> Ad1445	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	375	1	a
2020	3018	Infant formula stage 1 new formula (26,0%FL)	Poudre de lait infantile 0-6 mois nouvelle formule (26,0%MG)	<i>C. turicensis</i> Ad1445	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	375	1	a
2020	3019	Infant formula stage 1 without oil palm (23,5%FL)	Poudre de lait infantile 0-6 mois sans huile de palme (23,5%MG)	<i>C. turicensis</i> Ad1445	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	375	1	a



Year of analysis	Sample N°	Product	Product (French name)	Artificial contaminations					Global result	Test portion (g)	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level				
								CFU/sample				
					Mean							
2020	3020	Infant formula 6 months (26,6%FL)	Poudre de lait infantile dès 6 mois, Fer, DHA, vitamines A, C, D (26,6%MG)	<i>C. turicensis</i> Ad1445	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	375	1	a
2020	3021	Follow up infant formula(21,0%FL)	Poudre de lait infantile en relais de l'allaitement 6-12 mois (21,0% MG)	<i>C. turicensis</i> Ad1445	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	375	1	a
2020	2240	Infant cereals with probiotics biscuit +6 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur biscuit +6mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1430	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	b
2020	2241	Infant cereals with probiotics oat and wheat +6 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles avoine complète et blé + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1430	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	b
2020	2242	Infant cereals with probiotics 5 cereals + 6 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles 5 céréales + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1430	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	b
2020	2243	Infant cereals with probiotics vanilla without sugar +6 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur vanille sans sucre ajouté +6mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1430	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	b
2020	2244	Infant cereals with probiotics vanilla+10 months ( <i>Bifidobacterium lactis</i> 1,6.10 <sup>5</sup> CFU/g)	Céréales infantiles vanille +10 mois avec probiotiques ( <i>B. lactis</i> 1,6.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1430	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	b
2020	2245	Infant formula with probiotics 6-12 months ( <i>Lactobacillus reuteri</i> 4,2.10 <sup>6</sup> CFU/g) (24,3%FL)	Poudre de lait infantiles 6-12 mois avec probiotiques ( <i>Lactobacillus reuteri</i> 4,2.10 <sup>6</sup> UFC/g) (24,3% MG)	<i>C. sakazakii</i> Ad916	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	1,2	+	50	1	b
2020	2246	Infant formula with probiotics 6-12 months ( <i>Bifidobacterium lactis</i> 5,2.10 <sup>6</sup> CFU/g) (23,9%FL)	Poudre de lait infantiles 6-12 mois avec probiotiques ( <i>B. lactis</i> 5,2.10 <sup>6</sup> UFC/g) (23,9%MG)	<i>C. sakazakii</i> Ad916	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	1,2	+	50	1	b
2020	2247	Thickened Infant Formula with probiotics stage 1 ( <i>Lactobacillus reuteri</i> 4,8.10 <sup>6</sup> CFU/g) (23,9%FL)	Poudre de lait infantiles formule épaisse 1er âge avec probiotiques ( <i>Lactobacillus reuteri</i> 4,8.10 <sup>6</sup> UFC/g) (23,9%MG)	<i>C. sakazakii</i> Ad916	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	1,2	+	50	1	b
2020	2248	Infant formula with probiotics 6 months ( <i>Lactobacillus fermentum</i> 2,3.10 <sup>6</sup> CFU/g) (22%FL)	Poudre de lait infantiles dès 6 mois avec probiotiques ( <i>Lactobacillus fermentum</i> 2,3.10 <sup>6</sup> UFC/g) (22%MG)	<i>C. sakazakii</i> Ad916	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	1,2	+	50	1	b
2020	2249	Infant formula with probiotics ( <i>Bifidobacterium infantis</i> 2,3.10 <sup>6</sup> CFU/g) (24%FL)	Poudre de lait infantiles avec probiotiques ( <i>Bifidobacterium infantis</i> 2,3.10 <sup>6</sup> UFC/g) (24%MG)	<i>C. sakazakii</i> Ad916	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	1,2	+	50	1	b
2020	2250	Infant cereals with probiotics nuts + 12 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur noisette + 12mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> 138	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	+	50	1	b
2020	2251	Infant cereals with probiotics vanilla + 6 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur vanille + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> 138	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	+	50	1	b
2020	2252	Infant cereals with probiotics honey + 8 months ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur miel +8mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> 138	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	+	50	1	b
2020	2253	Infant cereals with probiotics milk chocolate and biscuit ( <i>Bifidobacterium lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles chocolat au lait saveur biscuit avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1813	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	+	50	1	b
2020	2254	Infant cereals with probiotics honey and biscuit ( <i>Bifidobacterium infantis</i> + <i>lactobacillus rhamnosus</i> 1,0.10 <sup>5</sup> CFU/g)	Céréales infantiles biscuit miel avec probiotiques ( <i>Bifidobacterium infantis</i> + <i>lactobacillus rhamnosus</i> 1,0.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad1813	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	+	50	1	b

Year of analysis	Sample N°	Product	Product (French name)	Artificial contaminations					Global result	Test portion (g)	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level				
								CFU/sample				
					Mean							
2020	376	Infant formula with probiotics stage 2 ( <i>Lactobacillus reuteri</i> 1,2.10 <sup>6</sup> CFU/g) (20,2%FL)	Poudre de lait infantiles avec probiotiques, 2ème âge système immunitaire ( <i>L. reuteri</i> 1,2.10 <sup>6</sup> UFC/g) (20,2%MG)	<i>C. sakazakii</i> Ad1418	Poudre de lait	Seeding lyophilized strain 2 weeks at room temperature	/	2,4	+	375	1	b
2020	379	Infant cereals with probiotics, 6 months, biscuit ( <i>Bifidobacterium lactis</i> 8,0.10 <sup>5</sup> CFU/g)	Céréales infantiles avec probiotiques, +6mois saveur biscuit ( <i>B. lactis</i> 8,0.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad2848	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	2,4	+	375	1	b
2020	380	Infant cereals with probiotics, 12 months, nuts and biscuit ( <i>Bifidobacterium lactis</i> 8,3.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, + 12 mois saveur noisette biscuit ( <i>B. lactis</i> 8,3.10 <sup>6</sup> UFC/g)	<i>C. sakazakii</i> Ad2848	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	2,4	+	375	1	b
2020	381	Infant cereals with probiotics, 6 months, vanilla ( <i>Bifidobacterium lactis</i> 9,0.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, +6 mois saveur vanille ( <i>B. lactis</i> 9,0.10 <sup>6</sup> UFC/g)	<i>C. sakazakii</i> Ad2848	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	2,4	+	375	1	b
2020	382	Infant cereals with probiotics, 8 months ( <i>Bifidobacterium lactis</i> 7,5.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, + 8 mois ( <i>B. lactis</i> 7,5.10 <sup>6</sup> UFC/g)	<i>C. sakazakii</i> Ad2849	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	3,0	+	375	1	b
2020	383	Infant cereals with probiotics, 8 months, caramel ( <i>Bifidobacterium lactis</i> 6,9.10 <sup>5</sup> CFU/g)	Céréales infantiles avec probiotiques, + 8 mois saveur caramel ( <i>B. lactis</i> 6,9.10 <sup>5</sup> UFC/g)	<i>C. sakazakii</i> Ad2849	Cereals	Seeding lyophilized strain 2 weeks at room temperature	/	3,0	+	375	1	b
2020	2909	Infant formula without oil palm (stage 1) with probiotics ( <i>Lactobacillus reuteri</i> 3,7.10 <sup>6</sup> CFU/g) (27,6%FL)	Poudre de lait infantiles 6 moi-1 an sans huile de palme ( <i>L. reuteri</i> 3,7.10 <sup>6</sup> UFC/g) (27,6%MG)	<i>C. sakazakii</i> Ad2913	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	4,2	+	375	1	b
2020	2910	Infant formula with lactic ferments with probiotics ( <i>L. actobacillusreuteri</i> and <i>S. thermophilus</i> 5.10 <sup>5</sup> CFU/g) (28,6%FL)	Poudre de lait infantiles 6 mois-1 an avec ferments lactiques ( <i>L. reuteri</i> et <i>S. thermophilus</i> 5.10 <sup>5</sup> UFC/g) (28,6%MG)	<i>C. sakazakii</i> Ad2913	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	4,2	+	375	1	b
2020	2143	Sodium caseinate	Caséinate de sodium	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	1,1	+	50	1	c
2020	2144	Milk protein isolate	Isolat de protéine de lait	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	1,1	+	50	1	c
2020	2145	Maltodextrin	Maltodextrine	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	1,1	+	50	1	c
2020	2146	Whey	Lactosérum	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	c
2020	2147	Maltodextrin	Maltodextrine	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	c
2020	2148	Whey	Lactosérum	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,6	+	50	1	c
2020	2785	Distarch phosphate	Phosphate de diamidon	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	-	50	1	c
2020	2787	Native starch	Amidon natif	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	-	50	1	c
2020	2789	Corn starch	Amidon de maïs	<i>C. sakazakii</i> Ad2849	Vegetables	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	50	1	c
2020	2792	NFDM	Ingrédient de poudre de lait écrémé	<i>C. sakazakii</i> Ad935	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	2,6	+	50	1	c
2020	2428	Whey protein isolate	Isolat de protéines de lactosérum	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	-	375	1	c
2020	2429	Whey	Lactosérum	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	+	375	1	c

Year of analysis	Sample No	Product	Product (French name)	Artificial contaminations					Global result	Test portion (g)	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level				
								CFU/sample				
					Mean							
2020	2430	Maltodextrin	Maltodextrine	<i>C. sakazakii</i> Ad1446	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	0,2	+	375	1	c
2020	2431	Whey permeat	Perméat de lactosérum	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	+	375	1	c
2020	2432	Maltodextrin	Maltodextrine	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	+	375	1	c
2020	2433	Native starch	Amidon natif	<i>C. sakazakii</i> Ad829	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	0,4	+	375	1	c
2020	2434	Sodium caseinate	Caseinate de sodium	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2435	Milk protein isolate	Isolat de protéine de lait	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2436	Distarch phosphate	Phosphate de diamidon	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2437	Modified starch	Amidon modifié	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2438	Distarch phosphate	Phosphate de diamidon	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2439	Maize starch	Amidon de maïs	<i>C. malonaticus</i> DSM18702	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	/	0,3	-	375	1	c
2020	2795	Whey	Lactosérum	<i>C. muytjensii</i> E769	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	2,2	+	375	1	c
2020	2796	Whey	Lactosérum	<i>C. sakazakii</i> Ad2382	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	375	1	c
2020	2797	Whey	Lactosérum	<i>C. muytjensii</i> E769	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	2,2	+	375	1	c
2020	2798	Whey	Lactosérum	<i>C. sakazakii</i> Ad2382	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	375	1	c
2020	2799	NFDM	Ingrédient de poudre de lait écrémé	<i>C. muytjensii</i> E769	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	2,2	+	375	1	c
2020	2800	Milk powder ingredient	Ingrédient Poudre de lait	<i>C. sakazakii</i> Ad2382	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	375	1	c
2020	2801	Sodium caseinate	Caseinate de sodium	<i>C. muytjensii</i> E769	Milk powder	Seeding lyophilized strain 2 weeks at room temperature	/	2,2	+	375	1	c
2020	2802	Whey	Lactosérum	<i>C. sakazakii</i> Ad2382	Infant formula	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	375	1	c

Year of analysis	Sample N°	Product	Product (French name)	Artificial contaminations					Global result	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level			
								CFU/sample			
Mean											
2020	3455	Wipe floor during process (dairy products industry)	Lingette sol atelier en cours de process (industrie produits laitiers)	<i>C. sakazakii</i> Ad2381	Infant formula	Seeding 48 h 3°C ± 2°C	/	1	+	2	a
2020	3456	Wipe during stripping 1 before cleaning (goat farm)	Lingette bloc moule FAB1 démoulage, avant nettoyage (chèvrerie)	<i>C. sakazakii</i> Ad2381	Infant formula	Seeding 48 h 3°C ± 2°C	/	1	+	2	a
2020	3457	Wipe during stripping 4 before cleaning (goat farm)	Lingette bloc moule FAB4 démoulage, avant nettoyage (chèvrerie)	<i>C. sakazakii</i> Ad2381	Infant formula	Seeding 48 h 3°C ± 2°C	/	1	+	2	a
2020	3458	Sponge before cleaning, work zone (dairy product industry)	Eponge sol zone travaux avant nettoyage (industrie produits laitiers)	<i>C. sakazakii</i> Ad831	Infant formula	Seeding 48 h 3°C ± 2°C	/	0,4	+	2	a
2020	3459	Wipe floor during process before cleaning (dairy products industry)	Lingette sol atelier en cours de process avant nettoyage (industrie produits laitiers)	<i>C. sakazakii</i> Ad831	Infant formula	Seeding 48 h 3°C ± 2°C	/	0,4	-	2	a
2020	3745	Swab after cleaning, cutter (ice cream production)	Ecouvillon après nettoyage, cutter (production glace)	<i>C. sakazakii</i> Ad2365	Environmental sample (dairy product)	Seeding lyophilized strain 2 weeks at room temperature	/	0,8	-	2	a
2020	3749	Wipe after cleaning, table (goat farm)	Lingette après nettoyage, table FAB-2 pasto (Chèvrerie)	<i>C. sakazakii</i> Ad2365	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	0,8	+	2	a
2020	3750	Sponge before cleaning, utensils (poultry ham production)	Eponge avant nettoyage, ustensiles TAB8 (production jambon de volaille)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	+	2	a
2020	3751	Sponge before cleaning, worktable (poultry ham production)	Eponge avant nettoyage, TAB8 sous vide (production jambon de volaille)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	+	2	a
2020	3752	Sponge before cleaning, clipper (poultry ham production)	Eponge avant nettoyage, clippeuse (production jambon de volaille)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	-	2	a
2020	3853	Wipe, table ice cream preparation, after cleaning	Lingette table préparation de glace TA14 après nettoyage	<i>C. sakazakii</i> Ad2401	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2,6	+	2	a
2020	3854	Wipe, machine pipe after cleaning (ice cream production)	Lingette tuyau machine glace après nettoyage	<i>C. sakazakii</i> Ad2401	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2,6	+	2	a
2020	3855	Wipe, mixer before cleaning (ice cream production)	Lingette mélangeur production de glace avant nettoyage	<i>C. sakazakii</i> Ad2404	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,6	+	2	a
2020	3856	Wipe, stripping table before cleaning (goat farm)	Lingette table de démoulage avant nettoyage (chèvrerie)	<i>C. sakazakii</i> Ad2404	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,6	-	2	a
2020	3860	Sponge, machine nozzle, after cleaning (ice cream production)	Eponge embout machine glace après nettoyage	<i>C. sakazakii</i> Ad2401	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2,6	+	2	a
2020	3861	Sponge, scale after cleaning (ice cream production)	Eponge balance production glace après nettoyage	<i>C. sakazakii</i> Ad2404	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,6	+	2	a
2020	3462	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	<i>C. dublinensis</i> LMG 23823T	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,2	-	2	b
2020	3463	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	<i>C. sakazakii</i> Ad2360	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,4	-	2	b
2020	3466	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	<i>C. dublinensis</i> LMG 23823T	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,2	+	2	b
2020	3467	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	<i>C. sakazakii</i> Ad2360	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	1,4	+	2	b
2020	3759	Process water, poultry slicing (poultry ham production)	Eau de process, découpe volaille (production jambon de dinde)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	+	2	b
2020	3760	Process water, cutter, poultry (poultry ham production)	Eau de process, cutter (production jambon de dinde)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	-	2	b
2020	3761	Rinse water, table (ice cream production)	Eau de rinçage pailleuse (production de glace)	<i>C. sakazakii</i> Ad2367	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2	+	2	b
2020	3762	Rinse water, cutter (ice cream production)	Eau de rinçage cutter vertical (production de glace)	<i>C. sakazakii</i> Ad2367	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2	+	2	b

Year of analysis	Sample N°	Product	Product (French name)	Artificial contaminations					Global result	Category	Type
				Strain	Origin	Injury protocol	Injury measurement	Inoculation level			
								CFU/sample			
					Mean						
2020	3763	Rinse water, mixer (ice cream production)	Eau de rinçage mélangeuse (production de glace)	<i>C. sakazakii</i> Ad2367	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2	-	2	b
2020	3764	Rinse water, washer boot (meat products industry)	Eau de process lave botte (industrie viande)	<i>C. condimenti</i> LMG 2650T	Meat product	Seeding 48 h 3°C ± 2°C	/	1,8	-	2	b
2020	4265	Rinse water (dairy products industry)	Eau de rinçage NEP 3 n°1 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2355	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	1,8	+	2	b
2020	4266	Rinse water, cream pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur crème n°2 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2355	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	1,8	-	2	b
2020	4267	Rinse water, tank (dairy products industry)	Eau de process tank osmosé n°3 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2355	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	1,8	-	2	b
2020	4268	Rinse water, tank (dairy products industry)	Eau de process tank osmosé n°4 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2357	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	2,8	+	2	b
2020	4269	Rinse water, milk pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur lait n°5 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2357	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	2,8	-	2	b
2020	4270	Rinse water, serum pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur sérum n°6 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2357	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	2,8	-	2	b
2020	4271	Rinse water, evaporator (dairy products industry)	Eau de rinçage sortie évaporateur n°7 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2359	Environmental sample (dairy products industry)	Seeding 48 h 3°C ± 2°C	/	1,4	-	2	b
2020	3468	Waste pork meat (meat products industry)	Déchets porc (industrie produits carnés)	<i>C. sakazakii</i> SU12-7	Environmental sample	Seeding 48 h 3°C ± 2°C	/	1,2	+	2	c
2020	3470	Waste beef slicing (meat product industry)	Déchet découpe bœuf (industrie produits carnés)	<i>C. sakazakii</i> SU12-7	Environmental sample	Seeding 48 h 3°C ± 2°C	/	1,2	+	2	c
2020	3472	Waste veal meat (meat product industry)	Déchet viande veau (industrie produits carnés)	<i>C. sakazakii</i> SU12-7	Environmental sample	Seeding 48 h 3°C ± 2°C	/	1,2	+	2	c
2020	3674	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	<i>C. dublinensis</i> DSM18707	Environmental sample (dairy product)	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	2	c
2020	3675	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	<i>C. dublinensis</i> DSM18707	Environmental sample (dairy product)	Seeding lyophilized strain 2 weeks at room temperature	/	2,3	+	2	c
2020	3866	Waste, vanilla ice cream (ice cream production)	Déchet de glace vanille (production de glace)	<i>C. sakazakii</i> Ad2401	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2,6	+	2	c
2020	3867	Waster, ice cream before icing (ice cream production)	Déchet mix crème glacée avant glaçage (production de glace)	<i>C. sakazakii</i> Ad2401	Environmental sample (dairy product)	Seeding 48 h 3°C ± 2°C	/	2,6	-	2	c
2020	3868	Waste, poultry ham (poultry ham production)	Déchet volaille dinde (production de jambon de volaille de dinde)	<i>C. sakazakii</i> SU 12-26	Environmental sample	Seeding 48 h 3°C ± 2°C	/	2,6	-	2	c
2020	4272	Vacuum dusts, milk tower (dairy product industry)	Poussière d'aspirateur tour lait niveau 7 n°23 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2387	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,2	0,8	+	2	c
2020	4273	Vacuum dusts, bagging machine (dairy product industry)	Poussière d'aspirateur GMP ensacheuse n°22 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2387	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,2	0,8	-	2	c
2020	4274	Vacuum dusts, serum (dairy product industry)	Poussière d'aspirateur poudre de lait GMP sérum n°21 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2387	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,2	0,8	+	2	c
2020	4275	Vacuum dusts, tower serum (dairy product industry)	Poussière d'aspirateur poudre de lait tour sérum niveau 3 n°26 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2387	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,2	0,8	+	2	c
2020	4276	Vacuum dusts, tower serum (dairy product industry)	Poussière d'aspirateur poudre de lait tour sérum niveau 5 n°24 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2387	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,2	0,8	+	2	c
2020	4435	Serum dusts (sieve chute) (dairy product industry)	Poussières poudre de sérum goulotte refus tamis niveau 3 n°29 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2393	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,4	2,4	+	2	c
2020	4436	Vacuum dusts, milk tower (dairy product industry)	Poussière poudre de lait aspirateur tour lait niveau 3 (industrie produits laitiers)	<i>C. sakazakii</i> Ad2393	Environmental sample (dairy products industry)	Spiking Heat treatment 56°C 8 min	2,4	2,4	-	2	c

## Appendix 4 – Sensitivity study: raw data

### Cronobacter detection results:

FL:	fat level
+m:	minority level of target analyte
+M:	majority level of target analyte
+p:	pure culture level of target analyte
+1/2:	50% level of target analyte
-:	no typical colonies but presence of background microflora
st:	plate without any colony
d:	doubtful colony
ni:	non isolated colonies
NC:	non-characteristic colony on nutrient agar
PA:	positive agreement
NA:	negative agreement
ND:	negative deviation
PD:	positive deviation
PPNA:	positive presumptive negative agreement
PPND:	positive presumptive negative deviation
NI:	no identification
	acidifying products tested with <i>Salmonella</i> Enrichissement 2X broth

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (0 - 50 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method														Category	Type
								50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C							50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10 µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement					
2020	1951	Organic infant formula (stage 1) (26% FL)	Poudre de lait infantiles 1er âge bio (26% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1952	Infant formula (stage 2) (26,6% FL)	Poudre de lait infantiles 2ème âge (26,6% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1953	Infant formula premium (stage 2) (21,8% FL)	Poudre de lait infantiles premium 2ème âge (21,8% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1954	Infant formula (stage 2) (24% FL)	Poudre de lait infantiles 2ème âge (24% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1955	Infant formula (stage 1) (24,7% FL)	Poudre de lait infantiles 1er âge (24,7% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1956	Infant formula (6-12 months) (23% FL)	Poudre de lait infantiles bio 6-12 mois (23% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1957	Organic infant formula (stage 1) (26% FL)	Poudre de lait infantiles 1er âge bio (26% MG)	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	1958	Infant formula (stage 2) (26,6% FL)	Poudre de lait infantiles 2ème âge (26,6% MG)	+p	-	<i>Cronobacter</i> spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	a	
2020	1959	Infant formula premium (stage 2) (21,8% FL)	Poudre de lait infantiles premium 2ème âge (21,8% MG)	+p	-	<i>Cronobacter</i> spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	a	
2020	1960	Infant formula (stage 2) (24% FL)	Poudre de lait infantiles 2ème âge (24% MG)	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	1961	Infant formula (stage 1) (24,7% FL)	Poudre de lait infantiles 1er âge (24,7% MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	1962	Infant formula (6-12 months) (23% FL)	Poudre de lait infantiles bio 6-12 mois (23% MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	2505	Infant cereals without gluten +4months	Mes premières céréales sans gluten dès 4 mois	+M	-	<i>Cronobacter</i> spp.	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	1	a	
2020	2506	Infant cereals corn	Céréales infantiles 1ères maïs	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2507	Organic infant cereals	Céréales infantiles bio nature	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2508	Organic infant cereals oat and wheat	Céréales infantiles bio blé et avoine	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2509	Organic infant cereals 7 cereals + 6 months	Céréales infantiles récoltes bio 7 céréales dès 6 mois	+p	-	<i>Cronobacter</i> spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	a	
2020	2510	Infant cereals 4-6 months	Mes premières céréales dès 4-6 mois	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+M	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	2511	Infant cereals without gluten +4months	Mes premières céréales sans gluten dès 4 mois	-	/	/	-	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+1/2	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2512	Infant cereals corn	Céréales infantiles 1ères maïs	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	2513	Organic infant cereals	Céréales infantiles bio nature	st	/	/	-	-	/	/	/	-	-	NA						1	a		

\* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (0 - 50 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method														Category	Type
								50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C							50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10 µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification	With purification ISO 22964 tests	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification	With purification ISO 22964 tests	Final result 72 h	Agreement					
					API ID32 E	Oxidase	API ID32 E				API ID32 E	Oxidase	API ID32 E										
2020	2514	Organic infant cereals oat and wheat	Céréales infantiles bio blé et avoine	-	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	2515	Organic infant cereals 7 cereals +6 months	Céréales infantiles récoltes bio 7 céréales dès 6 mois	st	/	/	-	st	/	/	/	-	-	NA						1	a		
2020	2516	Infant cereals 4-6 months	Mes premières céréales dès 4-6 mois	st	/	/	-	-	/	/	/	-	-	NA						1	a		
2020	2517	Infant cereals 6 fruits	Céréales infantiles mes céréales 6 fruits	st	/	/	-	-	/	/	/	-	-	NA						1	a		
2020	2235	Infant formula with probiotics 0-6 months ( <i>B. lactis</i> 1,6.10 <sup>6</sup> CFU/g) (23,9%FL)	Poudre de lait infantiles 0-6 mois avec probiotiques ( <i>B. lactis</i> 1,6.10 <sup>6</sup> CFU/g) (23,9%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2236	Thickened Infant formula with probiotics stage 2 ( <i>B. infantis</i> 1,6.10 <sup>6</sup> CFU/g) (24%FL)	Poudre de lait infantiles épaissie 2ème âge avec probiotiques ( <i>B. infantis</i> 1,6.10 <sup>6</sup> CFU/g) (24%MG)	st	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2237	Infant formula with probiotics stage 2 ( <i>Lactobacillus reuteri</i> 2,2.10 <sup>6</sup> CFU/g) (24,3%FL)	Poudre de lait infantiles relai 2ème âge avec probiotiques ( <i>Lactobacillus reuteri</i> 2,2.10 <sup>6</sup> CFU/g) (24,3%MG)	st	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2238	Infant formula with probiotics stage 2 ( <i>B. infantis</i> 2,2.10 <sup>5</sup> CFU/g) (22%FL)	Poudre de lait infantiles 2ème âge avec probiotiques ( <i>B. infantis</i> 2,2.10 <sup>6</sup> CFU/g) (22%MG)	st	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2239	Thickened Infant formula with probiotics stage 2 (Bifidobacteria 1,2.10 <sup>5</sup> CFU/g) (20,1%FL)	Poudre de lait infantiles formule épaisse 2ème âge avec probiotiques (Bifidobactéries 1,2.10 <sup>6</sup> UFC/g) (20,1%MG)	st	/	/	-	st	/	/	/	-	-	NA						1	b		
2020	2240	Infant cereals with probiotics biscuit +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur biscuit +6mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2241	Infant cereals with probiotics oat and wheat +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles avoine complète et blé +6mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	b	
2020	2242	Infant cereals with probiotics 5 cereals +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles 5 céréales + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	b	



INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (0 - 50 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method														Category	Type
								50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C							50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10 µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement					
2020	2243	Infant cereals with probiotics vanilla without sugar +6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur vanille sans sucre ajouté + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2244	Infant cereals with probiotics vanilla+ 10 months ( <i>B. lactis</i> 1,6.10 <sup>5</sup> CFU/g)	Céréales infantiles vanille + 10 mois avec probiotiques ( <i>B. lactis</i> 1,6.10 <sup>5</sup> UFC/g)	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	b	
2020	2245	Infant formula with probiotics 6-12 months ( <i>Lactobacillus reuteri</i> 4,2.10 <sup>6</sup> CFU/g) (24,3%FL)	Poudre de lait infantiles 6-12 mois avec probiotiques ( <i>Lactobacillus reuteri</i> 4,2.10 <sup>6</sup> UFC/g) (24,3%MG)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2246	Infant formula with probiotics 6-12 months ( <i>B. lactis</i> 5,2.10 <sup>6</sup> CFU/g) (23,9%FL)	Poudre de lait infantiles 6-12 mois avec probiotiques ( <i>B. lactis</i> 5,2.10 <sup>6</sup> UFC/g) (23,9%MG)	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	b	
2020	2247	Thickened Infant Formula with probiotics stage 1 ( <i>Lactobacillus reuteri</i> 4,8.10 <sup>6</sup> CFU/g) (23,9%FL)	Poudre de lait infantiles formule épaisse 1er âge avec probiotiques ( <i>Lactobacillus reuteri</i> 4,8.10 <sup>6</sup> UFC/g) (23,9%MG)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2248	Infant formula with probiotics 6 months ( <i>Lactobacillus fermentum</i> 2,3.10 <sup>6</sup> CFU/g) (22%FL)	Poudre de lait infantiles dès 6 mois avec probiotiques ( <i>Lactobacillus fermentum</i> 2,3.10 <sup>6</sup> UFC/g) (22%MG)	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	b	
2020	2249	Infant formula with probiotics ( <i>Bifidobacterium infantis</i> 2,3.10 <sup>6</sup> CFU/g) (24%FL)	Poudre de lait infantiles avec probiotiques ( <i>Bifidobacterium infantis</i> 2,3.10 <sup>6</sup> UFC/g) (24%MG)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2250	Infant cereals with probiotics nuts + 12 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur noisette + 12mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	
2020	2251	Infant cereals with probiotics vanilla + 6 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur vanille + 6 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b	

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (0 - 50 g)																								
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method															Category	Type
								50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C									50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C + Storage enrichment broth 72 h at 5 ± 3°C							
				CCI Agar (10 µl) – 21 h at 41.5 ± 1°C									CCI Agar (10µl) – 21 h at 41.5 ± 1°C											
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase    API ID32 E		Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	Oxidase	With purification ISO 22964 tests API ID32 E		Final result 72 h	Agreement			
2020	2252	Infant cereals with probiotics honey + 8 months ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles saveur miel + 8 mois avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	b		
2020	2253	Infant cereals with probiotics milk chocolate and biscuit ( <i>B. lactis</i> 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles chocolat au lait saveur biscuit avec probiotiques ( <i>B. lactis</i> 1,2.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	b		
2020	2254	Infant cereals with probiotics honey and biscuit ( <i>Bifidobacterium infantis</i> + <i>lactobacillus rhamnosus</i> 1,0.10 <sup>5</sup> CFU/g)	Céréales infantiles biscuit miel avec probiotiques ( <i>Bifidobacterium infantis</i> + <i>lactobacillus rhamnosus</i> 1,0.10 <sup>5</sup> UFC/g)	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	st (stx5)	/	/	/	-	ND	1	b		
2020	2961	Organic Infant cereals with probiotics, exotic fruits ( <i>B. lactis</i> 2,3.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques bio et fruits exotiques (Blé, avoine, seigle, mangue, passion, banane) ( <i>B. lactis</i> 2,3.10 <sup>6</sup> UFC/g)	st	/	/	-	-	/	/	/	-	-	NA							1	b		
2020	2962	Organic Infant cereals with probiotics ( <i>B. lactis</i> 1,8.10 <sup>5</sup> CFU/g)	Céréales infantiles avec probiotiques bio à mélanger, 7 céréales ( <i>B. lactis</i> 1,8.10 <sup>5</sup> UFC/g)	st	/	/	-	-	/	/	/	-	-	NA							1	b		
2020	2137	Sodium caseinate	Caseinate de sodium	st	/	/	-	st	/	/	/	-	-	NA							1	c		
2020	2138	Milk protein isolate	Isolat de protéine de lait	st	/	/	-	st	/	/	/	-	-	NA							1	c		
2020	2139	Maltodextrin	Maltodextrine	st	/	/	-	st	/	/	/	-	-	NA							1	c		
2020	2140	Whey	Lactosérum	st	/	/	-	st	/	/	/	-	-	NA							1	c		
2020	2141	Maltodextrin	Maltodextrine	st	/	/	-	-	/	/	/	-	-	NA							1	c		
2020	2142	Whey	Lactosérum	-	/	/	-	-	/	/	/	-	-	NA							1	c		
2020	2143	Sodium caseinate	Caseinate de sodium	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	c		
2020	2144	Milk protein isolate	Isolat de protéine de lait	+p	-	Cronobacter spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	c		
2020	2145	Maltodextrin	Maltodextrine	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	c		
2020	2146	Whey	Lactosérum	+p	-	Cronobacter spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	c		
2020	2147	Maltodextrin	Maltodextrine	st	/	/	-	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PD	+p	Cronobacter spp.	-	/	+	PD	1	c		
2020	2148	Whey	Lactosérum	+p	-	Cronobacter spp.	+	+p	Cronobacter spp.	-	Cronobacter spp.	/	+	PA	+p	Cronobacter spp.	-	/	+	PA	1	c		
2020	2784	Distarch phosphate	Phosphate de diamidon	st	/	/	-	st	/	/	/	-	-	NA							1	c		
2020	2785	Distarch phosphate	Phosphate de diamidon	st	/	/	-	st	/	/	/	-	-	NA							1	c		

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (0 - 50 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method														Category	Type
								50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C							50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10 µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification	With purification ISO 22964 tests	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification	With purification ISO 22964 tests	Final result 72 h	Agreement					
					API ID32 E	Oxidase	API ID32 E				API ID32 E	Oxidase	API ID32 E										
2020	2786	Native starch	Amidon natif	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2787	<b>Native starch</b>	<b>Amidon natif</b>	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2788	Corn starch	Amidon de maïs	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2789	<b>Corn starch</b>	<b>Amidon de maïs</b>	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	c	
2020	2790	Permeate of whey	Peméat de lactosérum	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2791	NFDM	Ingrédient de poudre de lait écrémé	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2792	<b>NFDM</b>	<b>Ingrédient de poudre de lait écrémé</b>	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2793	NFDM	Ingrédient de poudre de lait écrémé	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2794	NFDM	Ingrédient de poudre de lait écrémé	st	/	/	-	-	/	/	/	-	-	NA						1	c		

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (50 - 375 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method -														Category	Type
								375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C							375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement					
2020	370	Infant formula stage 2, 6-12 months (20,4%FL)	Poudre de lait infantile, 2ème âge 6-12 mois, pre-complex (20,4%MG)	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PD	1	a	
2020	372	Infant cereals, multi cereals, 6months	Céréales infantiles, multi-céréales dès 6 mois	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+1/2	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	a	
2020	373	Infant cereals, biscuit, 6months	Céréales infantiles, saveur biscuit dès 6 mois	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	a	
2020	2636	Infant cereals biscuit	Céréales infantiles saveur biscuit	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2637	Infant cereals wheat and vanilla	Céréales infantiles blé et vanille	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2638	Infant cereals wheat and cocoa	Céréales infantiles blé et cacao	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2639	Infant cereals baby vanilla and chocolate chips	Céréales infantiles junior vanille pépites	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2640	Infant cereals multi-cereals	Céréales infantiles multi-céréales	-	/	/	-	+Md	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+p	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2641	Infant formula birth (21,8%FL)	Poudre de lait infantiles 1er âge dès la naissance (21,8%MG)	st	/	/	-	st	/	/	/	-	-	NA							1	a	
2020	2642	Organic infant formula stage 2 (26%FL)	Poudre de lait infantiles bio 2ème âge (26%MG)	st	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2643	Infant formula stage 2 (24%FL)	Poudre de lait infantiles 2ème âge (24%MG)	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2644	Organic infant formula stage 2 (23%FL)	Poudre de lait infantiles bio 2ème âge (23%MG)	-	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2645	Infant formula stage 1 (24%FL)	Poudre de lait infantiles 1er âge (24%MG)	st	/	/	-	-	/	/	/	-	-	NA							1	a	
2020	2646	Infant cereals growth, vanilla	Céréales infantiles croissance vanille gourmande	st	/	/	-	+m	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2647	Infant cereals baby, buns and chocolates chips	Céréales infantiles junior saveur brioche pépites	-	/	/	-	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2648	Infant cereals 7 cereals and banana	Céréales infantiles 7 céréales et banane	st	/	/	-	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	1	a	
2020	2649	Infant formula stage 2 (23,6%FL)	Poudre de lait infantiles 2ème âge (23,6%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	2650	Organic infant formula (22,9%FL)	Poudre de lait infantiles lait de suite les récoltes bio (22,9%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	3017	Infant formula stage 2 (22,0%FL)	Poudre de lait infantile 2ème âge, fibres, vitamines, DHA (22,0%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	
2020	3018	Infant formula stage 1 new formula (26,0%FL)	Poudre de lait infantile 0-6 mois nouvelle formule (26,0%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a	

\* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (50 - 375 g)																								
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method -															Category	Type
								375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C							375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C + Storage enrichment broth 72 h at 5 ± 3°C									
				CCI Agar (10µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C													
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement						
2020	3019	Infant formula stage 1 without oil palm (23,5%FL)	Poudre de lait infantile 0-6 mois sans huile de palme (23,5%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a		
2020	3020	Infant formula 6 months (26,6%FL)	Poudre de lait infantile dès 6 mois, Fer, DHA, vitamines A, C, D (26,6%MG)	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	a		
2020	3021	Follow up infant formula(21,0%FL)	Poudre de lait infantile en relais de l'allaitement 6-12 mois (21,0% MG)	+p	-	<i>Cronobacter</i> spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	a		
2020	376	Infant formula with probiotics stage 2 ( <i>L. reuteri</i> 1,2.10 <sup>6</sup> CFU/g) (20,2%FL)	Poudre de lait infantiles avec probiotiques, 2ème âge système immunitaire ( <i>L. reuteri</i> 1,2.10 <sup>6</sup> CFU/g) (20,2%MG)	+p	-	+	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	b		
2020	379	Infant cereals with probiotics, 6 months, biscuit ( <i>B. lactis</i> 8,0.10 <sup>5</sup> CFU/g)	Céréales infantiles avec probiotiques, +6mois saveur biscuit ( <i>B. lactis</i> 8,0.10 <sup>5</sup> CFU/g)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	b		
2020	380	Infant cereals with probiotics, 12 months, nuts and biscuit ( <i>B. lactis</i> 8,3.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, +12 mois saveur noisette biscuit ( <i>B. lactis</i> 8,3.10 <sup>6</sup> CFU/g)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	b		
2020	381	Infant cereals with probiotics, 6 months, vanilla ( <i>B. lactis</i> 9,0.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, +6 mois saveur vanille ( <i>B. lactis</i> 9,0.10 <sup>6</sup> CFU/g)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	b		
2020	382	Infant cereals with probiotics, 8 months ( <i>B. lactis</i> 7,5.10 <sup>6</sup> CFU/g)	Céréales infantiles avec probiotiques, + 8 mois ( <i>B. lactis</i> 7,5.10 <sup>6</sup> CFU/g)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	b		
2020	383	Infant cereals with probiotics, 8 months, caramel ( <i>B. lactis</i> 6,9.10 <sup>5</sup> CFU/g)	Céréales infantiles avec probiotiques, +8 mois saveur caramel ( <i>B. lactis</i> 6,9.10 <sup>5</sup> CFU/g)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+	PA	1	b		
2020	2265	Organic Infant formula stage 2 with probiotics ( <i>Lactobacillus reuteri</i> 4,3.10 <sup>6</sup> CFU/g) (24%FL)	Poudre de lait infantile bio 2ème âge avec probiotiques ( <i>Lactobacillus reuteri</i> 4,3.10 <sup>6</sup> CFU/g) (24%MG)	st	/	/	-	st	/	/	/	st	-	NA							1	b		
2020	2266	Infant formula with probiotics stage 1 ( <i>Bifidobacterium breve</i> MI6-V 1,8.10 <sup>6</sup> CFU/g) (22%FL)	Poudre de lait infantile 1er âge avec probiotiques ( <i>Bifidobacterium breve</i> MI6-V 1,8.10 <sup>6</sup> CFU/g) (22%MG)	-	/	/	-	st	/	/	/	st	-	NA							1	b		

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (50 - 375 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method -														Category	Type
								375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C							375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement					
2020	2267	Infant formula stage 2 with probiotics (Bifidobacterium lactis 8,0.10 <sup>4</sup> CFU/g) (23%FL)	Poudre de lait infantile 2ème âge avec probiotiques (Bifidobacterium lactis 8,0.10 <sup>4</sup> CFU/g) (23%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2268	Infant formula stage 2 with probiotics (Lactobacillus reuteri 2,6.10 <sup>6</sup> CFU/g) (23,6%FL)	Poudre de lait infantile gourmands 2ème âge avec probiotiques (Lactobacillus reuteri 2,6.10 <sup>6</sup> CFU/g) (23,6%MG)	-	/	/	-	st	/	/	/	st	-	NA						1	b		
2020	2269	Infant formula stage 1 with probiotics (Lactobacillus reuteri 1,4.10 <sup>6</sup> CFU/g) (24,3%FL)	Poudre de lait infantile 1er âge avec probiotiques (Lactobacillus reuteri 1,4.10 <sup>6</sup> CFU/g) (24,3%MG)	st	/	/	-	st	/	/	/	st	-	NA						1	b		
2020	2270	Infant cereals with probiotics 5 cereals (B. lactis 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles 5 céréales avec probiotiques (B. lactis 1,2.10 <sup>5</sup> CFU/g)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2271	Infant cereals with probiotics biscuit (B. lactis 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles biscuit avec probiotiques (B. lactis 1,2.10 <sup>5</sup> CFU/g)	-	/	/	-	st	/	/	/	st	-	NA						1	b		
2020	2272	Infant cereals with probiotics wheat and oat (B. lactis 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles avoine et blé avec probiotiques (B. lactis 1,2.10 <sup>5</sup> CFU/g)	st	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2273	Infant cereals with probiotics vanilla (B. lactis 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles vanille avec probiotiques (B. lactis 1,2.10 <sup>5</sup> CFU/g)	st	/	/	-	-	/	/	/	st	-	NA						1	b		
2020	2274	Infant cereals with probiotics cereals and cocoa (B. lactis 1,2.10 <sup>5</sup> CFU/g)	Céréales infantiles céréales cacao avec probiotiques (B. lactis 1,2.10 <sup>5</sup> CFU/g)	st	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2909	Infant formula without oil palm (stage 1) with probiotics (L. reuteri 3,7.10 <sup>6</sup> CFU/g) (27,6%FL)	Poudre de lait infantiles 6 moi-1 an sans huile de palme (L. reuteri 3,7.10 <sup>6</sup> CFU/g) (27,6%MG)	+p	-	Cronobacter spp.	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	b	
2020	2910	Infant formula with lactic ferments with probiotics (L. reuteri and S. thermophilus 5.10 <sup>5</sup> CFU/g) (28,6%FL)	Poudre de lait infantiles 6 mois-1 an avec ferments lactiques (L. reuteri et S. thermophilus 5.10 <sup>5</sup> CFU/g) (28,6%MG)	+p	-	Cronobacter spp.	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	1	b	
2020	2916	Infant formula stage 1 with probiotics (L. reuteri 5,0.10 <sup>5</sup> CFU/g) (23,5%FL)	Poudre de lait infantiles bébés gourmands 6mois-1an (L. reuteri 5,0.10 <sup>5</sup> CFU/g) (23,5%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (50 - 375 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method -														Category	Type
								375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C							375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase API ID32 E	Final result 72 h	Agreement					
2020	2917	Thickened infant formula stage 1 with probiotics ( <i>L. reuteri</i> 6,0.10 <sup>6</sup> CFU/g) (24,3%FL)	Poudre de lait infantiles épaissie digest+ 6 mois – 1 an ( <i>L. reuteri</i> 6,0.10 <sup>6</sup> CFU/g) (24,3%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2918	Thickened infant formula birth with probiotics ( <i>B. infantis</i> 4,8.10 <sup>5</sup> CFU/g) (24,0%FL)	Poudre de lait infantiles épaissie actigest 0-6 mois ( <i>B. infantis</i> 4,8.10 <sup>5</sup> CFU/g) (24,0%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2919	Infant formula, immune system with probiotics ( <i>L. reuteri</i> 5,0.10 <sup>5</sup> CFU/g) ((22,0%FL)	Poudre de lait infantiles système immunitaire ( <i>B. infantis</i> 4,0.10 <sup>6</sup> CFU/g) (22,0%MG)	-	/	/	-	-	/	/	/	-	-	NA						1	b		
2020	2416	Milk protein isolate	Isolat de protéines de lactosérum	st	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2417	Whey	Lactosérum	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2418	Maltodextrin	Maltodextrine	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2419	Whey permeat	Permeate de lactosérum	st	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2420	Maltodextrin	Maltodextrine	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2421	Native starch	Amidon natif	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2422	Sodium caseinate	Caséinate de sodium	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2423	Milk protein isolate	Isolat de protéine de lait	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2424	Distarch phosphate	Phosphate de diamidon	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2425	Modified starch	Amidon modifié	-	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2426	Distarch phosphate	Phosphate de diamidon	st	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2427	Maize starch	Amidon de maïs	st	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2428	Whey protein isolate	Isolat de protéines de lactosérum	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2429	Whey	Lactosérum	+p	-	<i>Cronobacter spp.</i>	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	c	
2020	2430	Maltodextrin	Maltodextrine	+p	-	<i>Cronobacter spp.</i>	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	c	
2020	2431	Whey permeat	Permeate de lactosérum	+p	-	<i>Cronobacter spp.</i>	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	1	c	
2020	2432	Maltodextrin	Maltodextrine	+p	-	<i>Cronobacter spp.</i>	+	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PA	+p	<i>Cronobacter spp.</i>	-	/	+	PA	1	c	
2020	2433	Native starch	Amidon natif	st	/	/	-	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PD	+p	<i>Cronobacter spp.</i>	-	/	+	PD	1	c	
2020	2434	Sodium caseinate	Caséinate de sodium	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2435	Milk protein isolate	Isolat de protéine de lait	st	/	/	-	-	/	/	/	-	-	NA						1	c		
2020	2436	Distarch phosphate	Phosphate de diamidon	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2437	Modified starch	Amidon modifié	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2438	Distarch phosphate	Phosphate de diamidon	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2439	Maize starch	Amidon de maïs	st	/	/	-	st	/	/	/	-	-	NA						1	c		
2020	2795	Whey	Lactosérum	+p	-	<i>Cronobacter spp.</i>	+	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PA	+p	<i>Cronobacter spp.</i>	-	/	+	PA	1	c	
2020	2796	Whey	Lactosérum	+p	-	<i>Cronobacter spp.</i>	+	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PA	+p	<i>Cronobacter spp.</i>	-	/	+	PA	1	c	

INFANT FORMULA AND INFANT CEREALS WITH AND WITHOUT PROBIOTICS INCLUDING INGREDIENTS (50 - 375 g)																							
Year of analysis	Sample N°	Product	Product (French name)	Reference method: ISO 22964 (2017)*				Alternative method: CSD method -														Category	Type
								375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C							375 g + 1125 mL pre-warmed <i>Salmonella</i> Enrichissement broth + supplement CSD - 18 h at 41.5 ± 1°C + Storage enrichment broth 72 h at 5 ± 3°C								
				CCI Agar (10µl) – 21 h at 41.5 ± 1°C							CCI Agar (10µl) – 21 h at 41.5 ± 1°C												
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase	API ID32 E	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase	API ID32 E	Final result 72 h	Agreement			
2020	2797	Whey	Lactosérum	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2798	Whey	Lactosérum	+p	-	<i>Cronobacter</i> spp.	+	+Md	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+M	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2799	NFDM	Ingrédient de poudre de lait écrémé	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2800	Milk powder ingredient	Ingrédient Poudre de lait	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2801	Sodium caseinate	Caséinate de sodium	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	
2020	2802	Whey	Lactosérum	+p	-	<i>Cronobacter</i> spp.	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+(8)	<i>Cronobacter</i> spp.	-	/	+	PA	1	c	



PRODUCTION ENVIRONMENTAL SAMPLES

Year of analysis	Sample N°	Product	Product (French name)	Chromogenic <i>Cronobacter</i> Isolement (CCI) Agar - Environmental samples																Category	Type	
				Reference method ISO 22964 (2017) ♦				50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe qsp 225 mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C						50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe + 225mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C + <b>Enrichment broth storage for 72 h at 5 ± 3°C</b>								
								CCI Agar (10µl) – 21 h at 41,5 ± 1°C						CCI Agar (10µl) – 21 h at 41,5 ± 1°C								
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification	With purification ISO 22964 tests		Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification	With purification ISO 22964 tests		Final result 72 h			Agreement
				API ID32 E		Oxidase	API ID32 E					API ID32 E		Oxidase	API ID32 E							
2020	3450	Wipe cut table dairy products (dairy products production)	Lingette paillese découpe fromage + lait (production produits laitiers)	-	/	/	-	-	/	/	/	-	-	NA					2	a		
2020	3451	Wipe cut tools dairy products (dairy products production)	Lingette outils découpe fromage (production produits laitiers)	-	/	/	-	-	/	/	/	-	-	NA					2	a		
2020	3452	Wipe floor dairy products before cleaning (dairy products production)	Lingette avant nettoyage sol atelier (industrie produits laitiers)	-	/	/	-	-	/	/	/	-	-	NA					2	a		
2020	3453	Wipe stripping table before cleaning (goat farm)	Lingette avant nettoyage table démoulage (chèvrerie)	-	/	/	-	-	/	/	/	-	-	NA					2	a		
2020	3454	Sponge cleaned floor (meat products industry)	Eponge abattoir sol propre (industrie produits carnés)	-	/	/	-	-	/	/	/	-	-	NA					2	a		
2020	3455	Wipe floor during process (dairy products industry)	Lingette sol atelier en cours de process (industrie produits laitiers)	+p	-	+	+	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PA	+p	<i>Cronobacter spp.</i>	-	/	+	PA	2	a
2020	3456	Wipe during stripping 1 before cleaning (goat farm)	Lingette bloc moule FAB1 démoulage, avant nettoyage (chèvrerie)	+p	-	+	+	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PA	+p	<i>Cronobacter spp.</i>	-	/	+	PA	2	a
2020	3457	Wipe during stripping 4 before cleaning (goat farm)	Lingette bloc moule FAB4 démoulage, avant nettoyage (chèvrerie)	-	/	/	-	+p	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PD	+p	<i>Cronobacter spp.</i>	-	/	+	PD	2	a
2020	3458	Sponge before cleaning, work zone (dairy product industry)	Eponge sol zone travaux avant nettoyage (industrie produits laitiers)	-	/	/	-	+1/2	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PD	+1/2	<i>Cronobacter spp.</i>	-	/	+	PD	2	a
2020	3459	Wipe floor during process before cleaning (dairy products industry)	Lingette sol atelier en cours de process avant nettoyage (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA					2	a		
2020	3460	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	st	/	/	-	-	/	/	/	-	-	NA					2	b		
2020	3461	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	-	/	/	-	st	/	/	/	-	-	NA					2	b		
2020	3462	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	st	/	/	-	st	/	/	/	-	-	NA					2	b		
2020	3463	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB1 (chèvrerie)	st	/	/	-	-	/	/	/	-	-	NA					2	b		
2020	3464	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	st	/	/	-	-	/	/	/	-	-	NA					2	b		
2020	3465	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	st	/	/	-	-	/	/	/	-	-	NA					2	b		
2020	3466	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	+p	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	b
2020	3467	Rinse water after stripping (goat farm)	Eau de rinçage après démoulage FAB2 (chèvrerie)	+p	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	b
2020	3468	Waste pork meat (meat products industry)	Déchets porc (industrie produits carnés)	-	/	/	-	+m	<i>Cronobacter spp.</i>	-	<i>Cronobacter spp.</i>	/	+	PD	+1/2	<i>Cronobacter spp.</i>	-	/	+	PD	2	c

\* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

PRODUCTION ENVIRONMENTAL SAMPLES

Year of analysis	Sample N°	Product	Product (French name)	Chromogenic <i>Cronobacter</i> Isolement (CCI) Agar - Environmental samples																	Category	Type
				Reference method ISO 22964 (2017) ♦				50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe qsp 225 mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C							50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe + 225mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C + Enrichment broth storage for 72 h at 5 ± 3°C							
								CCI Agar (10µl) – 21 h at 41,5 ± 1°C							CCI Agar (10µl) – 21 h at 41,5 ± 1°C							
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification	With purification ISO 22964 tests		Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification	With purification ISO 22964 tests		Final result 72 h	Agreement		
					API ID32 E	Oxidase	API ID32 E					API ID32 E	Oxidase	API ID32 E								
2020	3469	Waste pork meat (meat products industry)	Déchet porc (industrie produits carnés)	-d/-	/	/	-	-	/	/	/	-	-	NA						2	c	
2020	3470	Waste beef slicing (meat product industry)	Déchet découpe bœuf (industrie produits carnés)	+M	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	c
2020	3471	Waste beef slicing (meat product industry)	Déchet découpe bœuf (industrie produits carnés)	-	/	/	-	-	/	/	/	-	-	NA						2	c	
2020	3472	Waste veal meat (meat product industry)	Déchet viande veau (industrie produits carnés)	+p	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	c
2020	3473	Waste veal meat (meat product industry)	Déchet viande veau (industrie produits carnés)	-	/	/	-	-	/	/	/	-	-	NA						2	c	
2020	3672	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	-	/	/	-	st	/	/	/	-	-	NA						2	c	
2020	3673	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	-	/	/	-	st	/	/	/	-	-	NA						2	c	
2020	3674	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	3675	Vacuum dusts (dairy product industry)	Poussières aspirateur (laitier)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	3743	Swab after cleaning, mixer (Ice cream production)	Ecouvillon après nettoyage, mélangeur (production glace)	st	/	/	-	st	/	/	/	-	-	NA						2	a	
2020	3744	Swab after cleaning, ice cream machine (Ice cream production)	Ecouvillon après nettoyage, machine glace (production glace)	st	/	/	-	st	/	/	/	-	-	NA						2	a	
2020	3745	Swab after cleaning, cutter (ice cream production)	Ecouvillon après nettoyage, cutter (production glace)	st	/	/	-	st	/	/	/	-	-	NA						2	a	
2020	3746	Wipe after cleaning, drain (goat farm)	Lingette après nettoyage, bonde FAB-1 pasto (Chèvrerie)	-	/	/	-	-	/	/	/	-	-	NA						2	a	
2020	3747	Wipe after cleaning, drain (goat farm)	Lingette après nettoyage, bonde FAB-2 pasto (Chèvrerie)	-	/	/	-	-	/	/	/	-	-	NA						2	a	
2020	3748	Wipe after cleaning, drain (goat farm)	Lingette après nettoyage, bonde FAB-4 pasto (Chèvrerie)	-	/	/	-	-	/	/	/	-	-	NA						2	a	
2020	3749	Wipe after cleaning, table (goat farm)	Lingette après nettoyage, table FAB-2 pasto (Chèvrerie)	+p	-	+	+	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+M	<i>Cronobacter</i> spp.	-	/	+	PA	2	a
2020	3750	Sponge before cleaning, utensils (poultry ham production)	Eponge avant nettoyage, ustensiles TAB8 (production jambon de volaille)	+p	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	a
2020	3751	Sponge before cleaning, worktable (poultry ham production)	Eponge avant nettoyage, TAB8 sous vide (production jambon de volaille)	st	/	/	-	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PD	+p	<i>Cronobacter</i> spp.	-	/	+	PD	2	a
2020	3752	Sponge before cleaning, clipper (poultry ham production)	Eponge avant nettoyage, clippeuse (production jambon de volaille)	st	/	/	-	st	/	/	/	-	-	NA						2	a	
2020	3753	Process water, poultry slicing (poultry ham production)	Eau de process découpe volaille (production jambon de dinde)	-	/	/	-	-	/	/	/	-	-	NA						2	b	
2020	3754	Process water, cutter, poultry (poultry ham production)	Eau de process cutter volaille (production jambon de dinde)	-	/	/	-	-	/	/	/	-	-	NA						2	b	

PRODUCTION ENVIRONMENTAL SAMPLES

Year of analysis	Sample N°	Product	Product (French name)	Reference method ISO 22964 (2017) ♦		Chromogenic <i>Cronobacter</i> Isolement (CCI) Agar - Environmental samples														Category	Type	
						50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe qsp 225 mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C							50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe + 225mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C + <b>Enrichment broth storage for 72 h at 5 ± 3°C</b>									
						CCI Agar (10µl) – 21 h at 41,5 ± 1°C							CCI Agar (10µl) – 21 h at 41,5 ± 1°C									
						CCI	Oxidase	Identification	Result	Typical colonies	Without purification	With purification ISO 22964 tests	Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification	With purification ISO 22964 tests	Final result 72 h			Agreement
					API ID32 E	Oxidase	API ID32 E						API ID32 E	Oxidase	API ID32 E							
2020	3755	Rinse water, table (ice cream production)	Eau de rinçage paillasse (production de glace)	-	/	/	-	-	/	/	/	-	-	NA							2	b
2020	3756	Rinse water, cutter (ice cream production)	Eau de rinçage cutter vertical (production de glace)	-	/	/	-	st	/	/	/	-	-	NA							2	b
2020	3757	Rinse water, mixer (ice cream production)	Eau de rinçage mélangeuse (production de glace)	st	/	/	-	-	/	/	/	-	-	NA							2	b
2020	3758	Rinse water, washer boot (meat products industry)	Eau de process lave botte (industrie viande)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	3759	Process water, poultry slicing (poultry ham production)	Eau de process, découpe volaille (production jambon de dinde)	+p	-	+	+	-	/	/	/	-	-	ND	-	/	/	/	-	ND	2	b
2020	3760	Process water, cutter, poultry (poultry ham production)	Eau de process, cutter (production jambon de dinde)	-	/	/	-	-	/	/	/	-	-	NA							2	b
2020	3761	Rinse water, table (ice cream production)	Eau de rinçage paillasse (production de glace)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	b
2020	3762	Rinse water, cutter (ice cream production)	Eau de rinçage cutter vertical (production de glace)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	b
2020	3763	Rinse water, mixer (ice cream production)	Eau de rinçage mélangeuse (production de glace)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	3764	Rinse water, washer boot (meat products industry)	Eau de process lave botte (industrie viande)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	3853	Wipe, table ice cream preparation, after cleaning	Lingette table préparation de glace TA14 après nettoyage	+M	-	+	+	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+1/2	<i>Cronobacter</i> spp.	-	/	+	PA	2	a
2020	3854	Wipe, machine pipe after cleaning (ice cream production)	Lingette tuyau machine glace après nettoyage	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	a
2020	3855	Wipe, mixer before cleaning (ice cream production)	Lingette mélangeur production de glace avant nettoyage	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	a
2020	3856	Wipe, stripping table before cleaning (goat farm)	Lingette table de démoulage avant nettoyage (chèvrerie)	st	/	/	-	-	/	/	/	-	-	NA							2	a
2020	3860	Sponge, machine nozzle, after cleaning (ice cream production)	Eponge embout machine glace après nettoyage	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	a
2020	3861	Sponge, scale after cleaning (ice cream production)	Eponge balance production glace après nettoyage	+p	-	+	+	st	/	/	/	-	-	ND	st	/	/	/	-	ND	2	a
2020	3866	Waste, vanilla ice cream (ice cream production)	Déchet de glace vanille (production de glace)	+M	-	+	+	+m	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+m	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	3867	Waster, ice cream before icing (ice cream production)	Déchet mix crème glacée avant glaçage (production de glace)	-	/	/	-	-	/	/	/	-	-	NA							2	c
2020	3868	Waste, poultry ham (poultry ham production)	Déchet volaille dinde (production de jambon de volaille de dinde)	-	/	/	-	-	/	/	/	-	-	NA							2	c

PRODUCTION ENVIRONMENTAL SAMPLES

Year of analysis	Sample N°	Product	Product (French name)	Reference method ISO 22964 (2017) ♦		Chromogenic <i>Cronobacter</i> Isolement (CCI) Agar - Environmental samples															Category	Type
						50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe qsp 225 mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C										50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe + 225mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C + <b>Enrichment broth storage for 72 h at 5 ± 3°C</b>						
						CCI Agar (10µl) – 21 h at 41,5 ± 1°C										CCI Agar (10µl) – 21 h at 41,5 ± 1°C						
						CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests		Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests			
						Oxidase	API ID32 E						Oxidase	API ID32 E								
2020	4265	Rinse water (dairy products industry)	Eau de rinçage NEP 3 n°1 (industrie produits laitiers)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	b
2020	4266	Rinse water, cream pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur crème n°2 (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	4267	Rinse water, tank (dairy products industry)	Eau de process tank osmosé n°3 (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	4268	Rinse water, tank (dairy products industry)	Eau de process tank osmosé n°4 (industrie produits laitiers)	+p	-	+	+	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	b
2020	4269	Rinse water, milk pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur lait n°5 (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	4270	Rinse water, serum pasteurizer (dairy products industry)	Eau de rinçage pasteurisateur sérum n°6 (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	4271	Rinse water, evaporator (dairy products industry)	Eau de rinçage sortie évaporateur n°7 (industrie produits laitiers)	st	/	/	-	st	/	/	/	-	-	NA							2	b
2020	4272	Vacuum dusts, milk tower (dairy product industry)	Poussière d'aspirateur tour lait niveau 7 n°23 (industrie produits laitiers)	+p	-	+	+	+p	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+p	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	4273	Vacuum dusts, bagging machine (dairy product industry)	Poussière d'aspirateur GMP ensacheuse n°22 (industrie produits laitiers)	-	/	/	-	-	/	/	/	-	-	NA							2	c
2020	4274	Vacuum dusts, serum (dairy product industry)	Poussière d'aspirateur poudre de lait GMP sérum n°21 (industrie produits laitiers)	+p	-	+	+	-	/	/	/	+m ( <i>Cronobacter</i> spp.)	-	ND	-	/	/	/	-	ND	2	c
2020	4275	Vacuum dusts, tower serum (dairy product industry)	Poussière d'aspirateur poudre de lait tour sérum niveau 3 n°26 (industrie produits laitiers)	+1/2	-	+	+	+M	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+M	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	4276	Vacuum dusts, tower serum (dairy product industry)	Poussière d'aspirateur poudre de lait tour sérum niveau 5 n°24 (industrie produits laitiers)	+M	-	+	+	+md	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	/	+	PA	+mdni/+	<i>Cronobacter</i> spp.	-	/	+	PA	2	c
2020	4277	Vacuum dusts, milk powder (dairy product industry)	Poussière d'aspirateur poudre de lait GMP lait n°20 (industrie produits laitiers)	-	/	/	-	-	/	/	/	-	-	NA							2	c
2020	4278	Vacuum dusts, serum powder (dairy product industry)	Poussière résidu de poudre de sérum, tour sérum n°31 (industrie produits laitiers)	-	/	/	-	+d(2)	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+M ( <i>Cronobacter</i> spp.)	+	PD	+mdni/+	<i>Cronobacter</i> spp.	-	/	+	PD	2	c
2020	4279	Waste milk powder, trash mix (dairy product industry)	Déchet poudre de lait, mélange poubelle n°5 (industrie produits laitiers)	st	/	/	-	-	/	/	/	-	-	NA							2	c
2020	4280	Waste milk powder, sampler (dairy product industry)	Déchet poudre de lait, échantillonneur n°6 (industrie produits laitiers)	st	/	/	-	-	/	/	/	-	-	NA							2	c
2020	4281	Vacuum dusts (dairy product industry)	Poussière d'aspirateur n°7 (industrie produits laitiers)	-	/	/	-	+d(6)	<i>Cronobacter</i> spp.	-	<i>Cronobacter</i> spp.	+1/2 ( <i>Cronobacter</i> spp.)	+	PD	+mdni/+	<i>Cronobacter</i> spp.	-	/	+	PD	2	c

PRODUCTION ENVIRONMENTAL SAMPLES

Year of analysis	Sample N°	Product	Product (French name)	Chromogenic <i>Cronobacter</i> Isolement (CCI) Agar - Environmental samples																	Category	Type
				Reference method ISO 22964 (2017) ♦				50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe qsp 225 mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C					50 g + 450 mL (or swab qsp 10 mL or sponge qsp 100 mL or Wipe + 225mL) Salmonella Enrichissement broth + supplement CSD - 16 h at 41,5 ± 1°C + <b>Enrichment broth storage for 72 h at 5 ±3°C</b>									
								CCI Agar (10µl) – 21 h at 41,5 ± 1°C					CCI Agar (10µl) – 21 h at 41,5 ± 1°C									
				CCI	Oxidase	Identification	Result	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase    API ID32 E		Negative samples CSB+CCI	Final result	Agreement	Typical colonies	Without purification API ID32 E	With purification ISO 22964 tests Oxidase    API ID32 E		Final result 72 h	Agreement		
2020	4435	Serum dusts (sieve chute) (dairy product industry)	Poussières poudre de sérum goulotte refus tamis niveau 3 n°29 (industrie produits laitiers)	+p	-	+	+	st	/	/	/	+p (Cronobacter spp.)	-	ND	-	/	/	/	-	ND	2	c
2020	4436	Vacuum dusts, milk tower (dairy product industry)	Poussière poudre de lait aspirateur tour lait niveau 3 (industrie produits laitiers)	-	/	/	-	st	/	/	/	+p (Cronobacter spp.)	-	NA	-	/	/	/	-	NA	2	c

Appendix 5 – Relative level of detection study: raw data

Matrix: Infant cereals with probiotics

Strain: *Cronobacter sakazakii* Ad2849

Protocol CSD method: 50 g + 450 mL *Salmonella* Enrichissement broth 1X + CSD supp + α amylase – 16 h at 41.5°C

Seeding lyophilized strain 2 weeks at room temperature

Lactic flora: 6,0.10<sup>5</sup> CFU/g (*Bifidobacterium lactis*)

N° sample	Level	Contamination level- (CFU/sample)	Reference method: ISO 22964 (2017)*			Number positive samples/Total	Alternative method: CSD method						Number positive samples/Total	
			CSB	Confirmation	Final result		50 g + 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C							
							CCI Agar (10µl) – 21 h at 41.5 ± 1°C							
							Typical colonies	Confirmation			Final result			
Without purification API ID32 E	With purification ISO 22964 tests Oxidase    API ID32 E		All confirmatory tests											
2978	0	/	st	/	-	0/5	st	/	/	/	-	-	0/5	
2979			st	/	-		st	/	/	/	-	-		
2980			st	/	-		st	/	/	/	-	-		
2981			st	/	-		st	/	/	/	-	-		
2982			st	/	-		st	/	/	/	-	-		
2983	Low	0,8	+p	+	+	14/20	st	/	/	/	-	-	16/20	
2984			+p	+	+		+p	+	-	+	+	+		+
2985			st	/	-		+p	+	-	+	+	+		+
2986			+p	+	+		+p	+	-	+	+	+		+
2987			+p	+	+		+p	+	-	+	+	+		+
2988			+p	+	+		+p	+	-	+	+	+		+
2989			st	/	-		+p	+	-	+	+	+		+
2990			+p	+	+		st	/	/	/	-	-		-
2991			+p	+	+		+p	+	-	+	+	+		+
2992			+p	+	+		+p	+	-	+	+	+		+
2993			st	/	-		+p	+	-	+	+	+		+
2994			+p	+	+		+p	+	-	+	+	+		+
2995			+p	+	+		+p	+	-	+	+	+		+
2996			+p	+	+		+p	+	-	+	+	+		+
2997			st	/	-		st	/	/	/	-	-		-
2998	st	/	-	+p	+	-	+	+	+	+				
2999	+p	+	+	+p	+	-	+	+	+	+				
3000	+p	+	+	+p	+	-	+	+	+	+				
3001	+p	+	+	st	/	/	/	-	-	-				
3002	st	/	-	+p	+	-	+	+	+	+				
3003	High	3,7	+p	+	+	5/5	+p	+	-	+	+	+	5/5	
3004			+p	+	+		+p	+	-	+	+	+		
3005			+p	+	+		+p	+	-	+	+	+		
3006			+p	+	+		+p	+	-	+	+	+		
3007			+p	+	+		+p	+	-	+	+	+		

\* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

Matrix: Infant formula with probiotics

Strain: *Cronobacter sakazakii* Ad2412

Protocol CSD method: 375 g + 1125 mL pre-warmed *Salmonella* enrichment 2X + CSD supp + Tween 80 – 18 h à 41.5°C

Seeding lyophilized strain 2 weeks at room temperature

Lactic flora: 2.6.10<sup>6</sup> CFU/g (*Bifidobacterium infantis*)

N° sample	Level	Contamination level- (CFU/sample)	Reference method: ISO 22964 (2017)*			Number positive samples/Total	Alternative method: CSD method					Number positive samples/Total
			CSB	Confirmation	Final result		375 g + 1125 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 18 h at 41.5°C					
							CCI Agar (10µl) – 21 h at 41.5 ± 1°C					
							Typical colonies	Confirmation		All confirmatory tests	Final result	
Without purification	With purification ISO 22964 tests											
						API ID32 E		Oxidase	API ID32 E			
3242	0	/	st	/	-	0/5	st	/	/	/	-	-
3243			st	/	-		st	/	/	/	-	-
3244			st	/	-		st	/	/	/	-	-
3245			st	/	-		st	/	/	/	-	-
3246			st	/	-		st	/	/	/	-	-
3163	Low	0,3	+p	+	+	7/20	st	/	/	/	-	-
3164			st	/	-		st	/	/	/	-	-
3165			st	/	-		st	/	/	/	-	-
3166			st	/	-		+p	+	-	+	+	+
3167			st	/	-		+p	+	-	+	+	+
3168			+p	+	+		st	/	/	/	-	-
3169			+p	+	+		+p	+	-	+	+	+
3170			st	/	-		+p	+	-	+	+	+
3171			+p	+	+		st	/	/	/	-	-
3172			+p	+	+		+p	+	-	+	+	+
3173			st	/	-		st	/	/	/	-	-
3174			st	/	-		+p	+	-	+	+	+
3175			st	/	-		+p	+	-	+	+	+
3176			st	/	-		st	/	/	/	-	-
3177			st	/	-		st	/	/	/	-	-
3178	st	/	-	st	/	/	/	-	-			
3179	+p	+	+	st	/	/	/	-	-			
3180	+p	+	+	st	/	/	/	-	-			
3181	st	/	-	st	/	/	/	-	-			
3182	st	/	-	st	/	/	/	-	-			
3247	High	1,5	+p	+	+	4/5	+p	+	-	+	+	+
3248			st	/	-		+p	+	-	+	+	+
3249			+p	+	+		+p	+	-	+	+	+
3250			+p	+	+		+p	+	-	+	+	+
3251			+p	+	+		+p	+	-	+	+	+

\* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

**Matrix: Rinsing water (ice cream production)**

**Strain: *C. muytjensii* E888**

**Protocol: 50g + 450 mL *Salmonella* enrichment broth + CSD supp - 16 h at 41,5°C**

**Seeding 48 h at 3°C ± 2°C**

Aerobic mesophilic flora: 1,8.10<sup>4</sup> UFC/mL

N° sample	Level	Contamination level- (CFU/sample)	Reference method : ISO 22964 (2017)♦			Number positive samples/Total	Chromogenic Cronobacter Isolement (CCI) Agar			Number positive samples/Total
			CSB	Confirmation	Final result		50g + 450mL <i>Salmonella</i> Enrichissement broth + CSD Supplement - 18h at 41,5°C			
			CCI				CCI Agar (10µl) – 21 h at 41,5 ± 1°C			
						Typical colonies	Confirmation	Final result		
4130	0	/	st	/	-	0/5	st	/	-	0/5
4131			st	/	-		st	/	-	
4132			st	/	-		st	/	-	
4133			st	/	-		st	/	-	
4134			st	/	-		st	/	-	
4135	Low	1,3	+p	+	+	13/20	+p	+	+	12/20
4136			+p	+	+		+p	+	+	
4137			st	/	-		st	/	-	
4138			+p	+	+		st	/	-	
4139			st	/	-		+p	+	+	
4140			+p	+	+		+p	+	+	
4141			+p	+	+		st	/	-	
4142			+p	+	+		+p	+	+	
4143			+p	+	+		st	/	-	
4144			+p	+	+		st	/	-	
4145			+p	+	+		+p	+	+	
4146			st	/	-		+p	+	+	
4147			+p	+	+		+p	+	+	
4148			st	/	-		+p	+	+	
4149			+p	+	+		+p	+	+	
4150			+p	+	+		+p	+	+	
4151			st	/	-		st	/	-	
4152			st	/	-		st	/	-	
4153			st	/	-		+p	+	+	
4154			+p	+	+		st	/	-	
4155	High	4,4	+p	+	+	5/5	+p	+	+	5/5
4156			+p	+	+		+p	+	+	
4157			+p	+	+		+p	+	+	
4158			+p	+	+		+p	+	+	
4159			+p	+	+		+p	+	+	

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Appendix 6 – Inclusivity and exclusivity study: raw data

INCLUSIVITY							
Strain		Reference	Origin	Inoculation level (CFU/225mL)	Alternative method: CSD method		
					+ 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C		
				10 µl onto CCI Agar - 21 h à 41.5 ± 1°C			
				Typical colonies	Confirmation without purification step API ID 32E		
1	<i>Cronobacter</i>	<i>dublinensis</i>	DSM18705	Dairy product	14	+	+
2	<i>Cronobacter</i>	<i>malonaticus</i>	DSM18702	Dairy product	11	+	+
3	<i>Cronobacter</i>	<i>malonaticus</i>	Ad1708	Dairy product	38	+	+
4	<i>Cronobacter</i>	<i>muytjensii</i>	CIP103581	/	19	+	+
5	<i>Cronobacter</i>	<i>turicensis</i>	Ad1445	Infant formula	29	+	+
6	<i>Cronobacter</i>	<i>turicensis</i>	E681	RTRH food	23	+	+
7	<i>Cronobacter</i>	<i>sakazakii</i>	Ad941	Infant formula	25	+	+
8	<i>Cronobacter</i>	<i>sakazakii</i>	Ad942	Infant formula	23	+	+
9	<i>Cronobacter</i>	<i>sakazakii</i>	Ad943	Infant formula	23	+	+
10	<i>Cronobacter</i>	<i>sakazakii</i>	Ad944	Infant formula	31	+	+
11	<i>Cronobacter</i>	<i>sakazakii</i>	Ad945	Infant formula	33	+	+
12	<i>Cronobacter</i>	<i>sakazakii</i>	Ad946	Infant formula	19	+	+
13	<i>Cronobacter</i>	<i>sakazakii</i>	Ad947	Infant formula	17	+	+
14	<i>Cronobacter</i>	<i>sakazakii</i>	Ad948	Infant formula	25	+	+
15	<i>Cronobacter</i>	<i>sakazakii</i>	Ad949	Infant formula	8	+	+
16	<i>Cronobacter</i>	<i>sakazakii</i>	Ad950	Infant formula	36	+	+
17	<i>Cronobacter</i>	<i>sakazakii</i>	Ad951	Infant formula	21	+	+
18	<i>Cronobacter</i>	<i>sakazakii</i>	Ad952	Infant formula	19	+	+
19	<i>Cronobacter</i>	<i>sakazakii</i>	Ad953	Infant formula	31	+	+
20	<i>Cronobacter</i>	<i>sakazakii</i>	Ad963	Infant formula	10	+	+
21	<i>Cronobacter</i>	<i>sakazakii</i>	Ad704	Infant formula	46	+ (pale colonies)	+
22	<i>Cronobacter</i>	<i>sakazakii</i>	Ad831	Infant formula	29	+	+
23	<i>Cronobacter</i>	<i>sakazakii</i>	Ad829	Infant formula	31	+	+
24	<i>Cronobacter</i>	<i>sakazakii</i>	Ad916	Infant formula	26	+	+
25	<i>Cronobacter</i>	<i>sakazakii</i>	Ad893	Infant formula	27	+	+
26	<i>Cronobacter</i>	<i>sakazakii</i>	Ad894	Infant formula	13	+	+

INCLUSIVITY							
Strain		Reference	Origin	Inoculation level (CFU/225mL)	Alternative method: CSD method		
					+ 450 mL <i>Salmonella</i> Enrichissement broth + CSD Supplement – 16 h at 41.5°C		
				10 µl onto CCI Agar - 21 h à 41.5 ± 1°C			
				Typical colonies		Confirmation without purification step API ID 32E	
27	<i>Cronobacter sakazakii</i>	Ad895	Infant formula	20	+ (pale colonies)	+	
28	<i>Cronobacter sakazakii</i>	Ad896	Infant formula	31	+	+	
29	<i>Cronobacter sakazakii</i>	Ad897	Infant formula	33	+	+	
30	<i>Cronobacter sakazakii</i>	Ad898	Infant formula	23	+	+	
31	<i>Cronobacter dublinensis lactaridi</i>	DSMZ18707 T	Dairy product	34	+	+	
32	<i>Cronobacter dublinensis lausannensis</i>	DSMZ 18706 T	Dairy product	30	+	+	
33	<i>Cronobacter sakazakii</i>	Ad1418	Infant formula	34	+	+	
34	<i>Cronobacter sakazakii</i>	Ad1419	Infant formula	37	+ (small colonies)	+	
35	<i>Cronobacter sakazakii</i>	Ad1420	Infant formula	29	+	+	
36	<i>Cronobacter sakazakii</i>	Ad1421	Infant formula	20	+	+	
37	<i>Cronobacter sakazakii</i>	Ad1424	Infant formula	23	+	+	
38	<i>Cronobacter sakazakii</i>	Ad1425	Infant formula	14	+	+	
39	<i>Cronobacter sakazakii</i>	Ad1433	Infant formula	31	+	+	
40	<i>Cronobacter sakazakii</i>	Ad1434	Infant formula	20	+	+	
41	<i>Cronobacter sakazakii</i>	Ad1435	Infant formula	32	+	+	
42	<i>Cronobacter sakazakii</i>	Ad939	Infant formula	45	+	+	
43	<i>Cronobacter malonaticus</i>	E684	Food	15	+	+	
44	<i>Cronobacter malonaticus</i>	E752	Baby food	13	+	+	
45	<i>Cronobacter muytjensii</i>	E888	Milk powder	24	+	+	
46	<i>Cronobacter muytjensii</i>	E769	Milk powder	10	+	+	
47	<i>Cronobacter dublinensis subsp dublinensis</i>	LMG 23823T	Environmental sample	22	+	+	
48	<i>Cronobacter dublinensis subsp lausanensis</i>	E798	/	26	+ (mucous colonies)	+	
49	<i>Cronobacter universalis</i>	NCTC 9529T	Water	23	+	+	
50	<i>Cronobacter condimenti</i>	LMG 26250T	Spiced meat	17	+	+	

EXCLUSIVITY								
Strain			Reference	Origin	Inoculation level (CFU/mL)	+225 mL BPW 24 h at 37°C		450 mL <i>Salmonella</i> Enrichissement broth + 5 mL CSD Supp 16 h at 41.5°C
						Streaking (10µl) onto CCI		Streaking (10µl) onto CCI
						Typical colonies	Confirmation	Typical colonies
1	<i>Citrobacter</i>	<i>braakii</i>	Ad833	Beef meat	4,2.10 <sup>5</sup>	-	/	/
2	<i>Citrobacter</i>	<i>diversus</i>	Ad100	Pork meat	7,9.10 <sup>5</sup>	-	/	/
3	<i>Citrobacter</i>	<i>fameri</i>	Ad116	Environmental sample	4,7.10 <sup>5</sup>	-	/	/
4	<i>Citrobacter</i>	<i>freundi</i>	39	Environmental sample	5,9.10 <sup>4</sup>	-	/	/
5	<i>Citrobacter</i>	<i>koseri</i>	CIP105177	/	4,9.10 <sup>5</sup>	-	/	/
6	<i>Enterobacter</i>	<i>aerogenes</i>	Ad889	Meat flour	5,6.10 <sup>5</sup>	-	/	/
7	<i>Enterobacter</i>	<i>agglomerans</i>	A00L065	Dairy product	3,3.10 <sup>5</sup>	-	/	/
8	<i>Enterobacter</i>	<i>agglomerans</i>	136	Dairy product	1,8.10 <sup>5</sup>	-	/	/
9	<i>Enterobacter</i>	<i>amnigenus</i>	52	Vegetable	2,2.10 <sup>5</sup>	st	/	/
10	<i>Enterobacter</i>	<i>amnigenus</i>	129	Raw milk	4,0.10 <sup>5</sup>	-	/	/
11	<i>Enterobacter</i>	<i>amnigenus</i>	A00C068	Poultry meat	3,8.10 <sup>5</sup>	-	/	/
12	<i>Enterobacter</i>	<i>cloacae</i>	51	Vegetable	1,8.10 <sup>5</sup>	st	/	/
13	<i>Enterobacter</i>	<i>cloacae</i>	10	Dairy product	2,4.10 <sup>5</sup>	-	/	/
14	<i>Enterobacter</i>	<i>fergusonii</i>	2876	Environmental sample	8,7.10 <sup>5</sup>	-	/	/
15	<i>Enterobacter</i>	<i>gergoviae</i>	CIP76.1	/	4,0.10 <sup>5</sup>	-	/	/
16	<i>Enterobacter</i>	<i>helveticus</i>	DSM 18396 T	Fruit powder	1,7.10 <sup>5</sup>	+d (green colonies)	ox-; API- ( <i>Escherichia vulneris</i> )	+
17	<i>Enterobacter</i>	<i>hormaechei</i>	Ad990	Butter	3,6.10 <sup>5</sup>	-	/	/
18	<i>Enterobacter</i>	<i>intermedius</i>	60	Vegetable	7,4.10 <sup>4</sup>	st	/	/
19	<i>Enterobacter</i>	<i>kobei</i>	Ad706	Milk powder	4,7.10 <sup>5</sup>	-	/	/
20	<i>Escherichia</i>	<i>coli</i>	16	Dairy product	7,9.10 <sup>5</sup>	-	/	/
21	<i>Escherichia</i>	<i>hermanii</i>	Ad462	Dairy product	1,9.10 <sup>5</sup>	-	/	/
22	<i>Hafnia</i>	<i>alvei</i>	Ad2274	Dairy product	3,6.10 <sup>5</sup>	-	/	/
23	<i>Klebsiella</i>	<i>pneumoniae</i>	122	Dairy product	2,9.10 <sup>5</sup>	-	/	/
24	<i>Leclercia</i>	<i>adecarboxylata</i>	Ad707	Milk powder	8,2.10 <sup>5</sup>	st	/	/
25	<i>Salmonella</i>	<i>arizonae</i> (51:z4,z23)	CIP 5523	/	3,2.10 <sup>5</sup>	-	/	/
26	<i>Salmonella</i>	<i>diazona</i> SIIIb 65 :c :z	Ad 1298	Environmental sample (dairy product)	8,7.10 <sup>5</sup>	-	/	/
27	<i>Salmonella</i>	<i>Typhimurium</i>	Ad1333	Dairy product	6,2.10 <sup>5</sup>	-	/	/

EXCLUSIVITY								
Strain			Reference	Origin	Inoculation level (CFU/mL)	+225 mL BPW 24 h at 37°C		450 mL <i>Salmonella</i> Enrichissement broth + 5 mL CSD Supp 16 h at 41.5°C
						Streaking (10µl) onto CCI		Streaking (10µl) onto CCI
						Typical colonies	Confirmation	Typical colonies
28	<i>Serratia</i>	<i>ficaria</i>	113	Vegetable	5,6.10 <sup>5</sup>	-	/	/
29	<i>Serratia</i>	<i>fonticola</i>	Ad1696	Raw milk	3,0.10 <sup>5</sup>	-	/	/
30	<i>Yersinia</i>	<i>intermedia</i>	Ad133	Dairy product	4,4.10 <sup>4</sup>	-	/	/
31	<i>Escherichia</i>	<i>vulneris</i>	Ad2853	Environmental sample (dairy product)	2,5.10 <sup>5</sup>	+d (green colonies)	ox-; API- ( <i>Escherichia vulneris</i> )	+

**Appendix 7 - Results obtained by the collaborative laboratories and the expert laboratory**

**Laboratory A**

Lactic flora: 7,4.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
13	-	/	-	-	/	-	NA
14	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
24	-	/	-	-	/	-	NA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory B**

Lactic flora: 8,9.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
13	-	/	-	-	/	-	NA
14	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
20	-	/	-	-	/	-	NA
22	-	/	-	-	/	-	NA
24	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory C**

Lactic flora: 8,3.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
13	-	/	-	-	/	-	NA
14	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
20	-	/	-	-	/	-	NA
22	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
24	-	/	-	-	/	-	NA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory D**

Lactic flora: 6,8.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	-	/	-	NA
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	-	/	-	-	/	-	NA
13	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
14	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
24	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA



**Laboratory E**

Lactic flora: 7,3.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	-	/	-	NA
6	-	/	-	-	/	-	NA
7	-	/	-	-	/	-	NA
13	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
14	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	-	/	-	-	/	-	NA
24	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory F**

Lactic flora: 6,8.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
13	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
14	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
20	-	/	-	-	/	-	NA
22	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
24	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory G (Day 3)**

Lactic flora: 5,3.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
6	-	/	-	-	/	-	NA
7	-	/	-	-	/	-	NA
13	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
14	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
20	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
22	-	/	-	-	/	-	NA
24	-	/	-	-	/	-	NA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory H**

Lactic flora: 6,3.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
6	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
7	-	/	-	-	/	-	NA
13	-	/	-	-	/	-	NA
14	-	/	-	-	/	-	NA
20	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
22	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
24	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory I**

Lactic flora: 6,4.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
13	-	/	-	-	/	-	NA
14	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
24	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory J**

Lactic flora: 6,4.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
6	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
7	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
13	-	/	-	-	/	-	NA
14	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
20	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
22	-	/	-	-	/	-	NA
24	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory K**

Lactic flora: 5,1.10<sup>6</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	-	/	-	NA
6	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
7	-	/	-	-	/	-	NA
13	-	/	-	-	/	-	NA
14	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
24	-	/	-	-	/	-	NA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory L**

Lactic flora: 8,3.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	-	/	-	NA
6	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
7	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
13	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
14	-	/	-	-	/	-	NA
20	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
22	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
24	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA



**Laboratory M**

Lactic flora: >3.10<sup>7</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
6	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
7	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
13	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
14	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
20	-	/	-	-	/	-	NA
22	-	/	-	-	/	-	NA
24	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory N**

Lactic flora: 7,4.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
6	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
7	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
13	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
14	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
20	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
22	-	/	-	-	/	-	NA
24	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory O**

Lactic flora: 6,5.10<sup>5</sup> CFU/g

N°Sample	Reference method: ISO 22964 (2017)			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
6	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
7	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
13	-	/	-	-	/	-	NA
14	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
20	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
22	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
24	-	/	-	-	/	-	NA
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

**Laboratory P ADRIA**

Lactic flora: 6,0.10<sup>5</sup>CFU/g

N°Sample	Reference method: ISO 22964 (2017)♦			Alternative method: CSD <i>Cronobacter</i> spp.			
	CSB/CCI		Final result	CCI		Final result	Agreement
	Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		Typical colonies (+/-)	Biochemical gallery (API® ID 32E)		
1	-	/	-	-	/	-	NA
5	-	/	-	-	/	-	NA
8	-	/	-	-	/	-	NA
10	-	/	-	-	/	-	NA
11	-	/	-	-	/	-	NA
15	-	/	-	-	/	-	NA
19	-	/	-	-	/	-	NA
23	-	/	-	-	/	-	NA
4	-	/	-	-	/	-	NA
6	-	/	-	+	<i>Cronobacter</i> spp.	+	PD
7	-	/	-	-	/	-	NA
13	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
14	-	-	-	-	/	-	NA
20	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
22	-	-	-	+	<i>Cronobacter</i> spp.	+	PD
24	+	<i>Cronobacter</i> spp.	+	-	/	-	ND
2	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
3	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
9	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
12	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
16	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
17	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
18	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA
21	+	<i>Cronobacter</i> spp.	+	+	<i>Cronobacter</i> spp.	+	PA

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on [www.cofrac.fr](http://www.cofrac.fr))