38948 Cronobacter screening broth (CSB)

An enrichment broth for the detection of *Cronobacter* (formerly *E. sakazakii*) from food and environmental samples.

Composition:

Ingredients	Grams/Litre
Peptone	10.0
Meat extract	3.0
Sodium chloride	5.0
Bromocresol purple	0.004
Sucrose	10.0
Final pH (at 25°C) 7.4 +/- 0.2	

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in tightly-sealed containers at 2-25°C.

Appearance:	Faint yellow and faint beige and faint brown coloured, homogeneous, free flowing powder.
Gelling:	Firm
Color and Clarity:	Purple coloured, opalescent gel forms in petri plates.

Directions:
Dissolve 28 g in 1000 ml of distilled water. Sterilize by autoclaving at 121°C for 15 minutes. Cool to approximately 50°C, and aseptically add the contents of 1 vial of Vancomycin Supplement (Cat. No. 75423) reconstituted as directed. Mix well and aseptically dispense into sterile containers.

Principle and Interpretation:
Cronobacter is a Gram negative, facultative anaerobic rod-shaped and motile bacterium and belongs to the Enterobacteriaceae family. It is closely related to the *Enterobacter* and *Citrobacter* species. *Cronobacter* was first described as yellow-pigmented *Enterobacter cloacae* (yellow pigment on a tryptic soy agar at 25°C). In the 1980's researchers used DNA-DNA hybridization to show that these strains were a unique taxonomic group and should be recognized as a separate species '*Enterobacter sakazakii'* (to honor the Japanese bacteriologist Riichi Sakazaki). The *Cronobacter* genus was defined first in 2007 and revised in 2008 based on studies of both partial 16S rDNA and hsp60 gene sequences, which showed that '*E. sakazakii'* isolates formed at least four distinct genomogroups which could be unique species. Today the genus is composed of *C. sakazakii, C. malonaticus, C.turicensis, C. muytjensii,* and *C. dublinensis,* plus an unnamed sixth species. *Cronobacter* spp. can grow over a wide temperature range. It starts near refrigeration temperature (5.5°C) and goes up to a growth temperature (44-47°C), depending on the strain. The organism is very tolerant of drying steps and can survive for two years desiccated in infant formula and then rapidly grow on reconstitution. The organism can cause severe neonatal infections: necrotizing enterocolitis, septicaemia and meningitis. The fatality rate following meningitis and other infections is 50%, with the survivors being neurologically damaged for life. Fortunately, infections are rare in infants but they can occur in all age groups, admittedly with less severe clinical outcomes. *Cronobacter* spp. has been shown to invade human intestinal cells, replicate in macrophages, and invade the blood-brain barrier.

Peptone and meat extract provides sources of nitrogenous nutrients. Sodium chloride maintains the osmotic balance and the sucrose is a fermentable carbohydrate for *Cronobacter*. In case of sucrose fermentation the pH will drop and the pH indicator Bromocresol purple change the color.

Cultural characteristics after 18-24 hours at 35-37°C.

Organisms (ATCC)	Growth	Color of Medium
Cronobacter sakazakii (12868)	+++	Yellow
Staphylococcus aureus (25923)	-	-
Escherichia coli (25922)	+++	Purple
Enterococcus faecalis (29212)	-	-

References:

1. ISO 6887-1:1999 Microbiology of food and animal feeding stuffs --Preparation of test samples, initial suspension and decimal dilutions for microbiological examination.
2. ISO 8261:2001 Milk and milk products -- General guidance for the preparation of test samples, initial suspensions and decimal dilutions for microbiological examination
3. Lai. 2001. Medicine. 80. 113-122
4. Mullane et al. 2007. Minerva Pediatr. 59. 137-148
5. Iversen et al. 2008. Appl. Environ. Microbiol. 74, 2550-2552

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.