Food Quality Program Overview

Food Protection Services

Environmental Health

BC Centre for Disease Control

FQ Program History

- FQ Program started in 1991
- Co-managed by the 5 Health Authorities, Food Laboratory and Food Protection Services
- Since discussions began in 1987, intent was to use the program to monitor “post-production” and “environmental contamination”

Food Quality Test Results Interpretation Guidelines

Food Quality Parameters

- Aerobic Colony Count
- Total Coliforms
- Fecal Coliforms
- *E. coli*

Aerobic Colony Count Interpretation

		Indicator Test Result (CFU [1] / gram)	
Food Group	**Indicator Test**	**Satisfactory[2]**	**Unsatisfactory[2]**
Canned foods	APC	< 5	> 5
Cooked hot-held food (eg, soup, samosa, hamburger patty)	APC	< 5	> 5
Cooked chilled food no handling (eg, sausage roll, ice cream[3])	APC	< 100	> 1000
Cooked chilled food with handling (sliced meat, sandwiches)	APC	< 100,000	> 1,000,000
Preserved foods and dried foods (eg, Smoked or pickled foods, powders, spices)	APC	< 100,000	> 1,000,000
Long shelf life fish products, meat products, fruit and vegetable products (eg, MAP or vacuum packed products	APC	< 1,000,000	> 100,000,000
Fermented foods (eg, yoghurts, fermented sausages, soft cheese[3])	APC	NOT APPLICABLE	NOT APPLICABLE
Fresh fruits and vegetables	APC	NOT APPLICABLE	NOT APPLICABLE

Aerobic Colony Count Interpretation

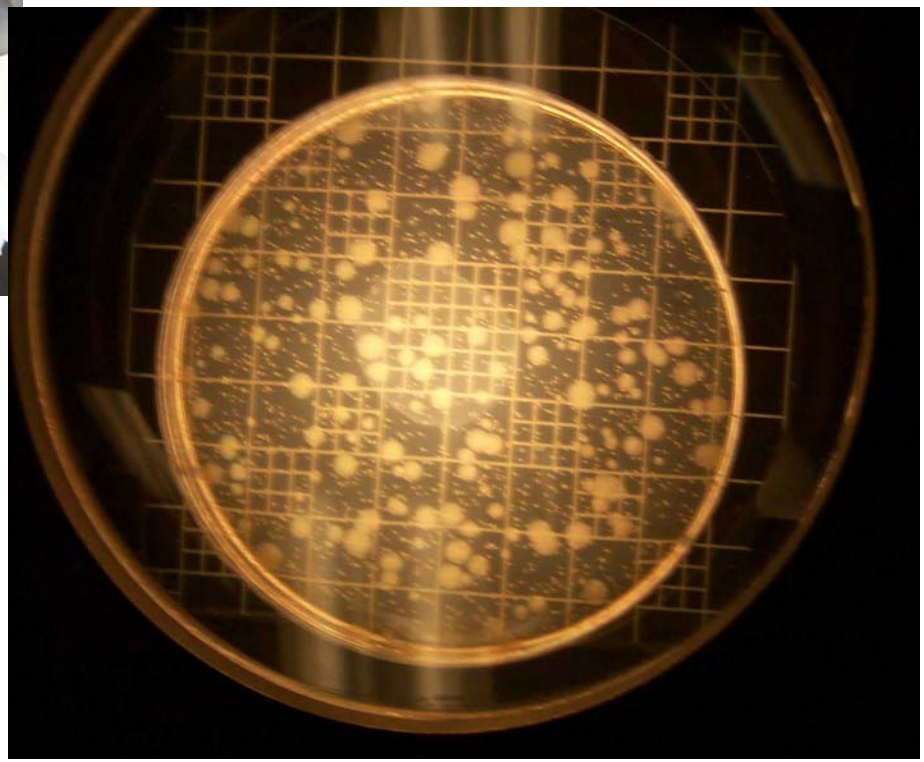
	Indicator Test Result (CFU / gram) and Interpretation	
Food Group	**Interpretation Satisfactory**	**Interpretation Unsatisfactory**
Canned foods	< 5	> 5
Cooked hot-held food (eg, soup, samosa, hamburger patty)	< 5	> 5
Cooked chilled food no handling (eg, sausage roll, ice cream)	< 100	> 1000
Cooked chilled food with handling (sliced meat, sandwiches)	< 100,000	> 1,000,000

Exception – Dairy Products where the Food and Drug Act Regulations apply - contact FPS for interpretation

B.08.062. [S]. Ice Cream

(a) shall be the frozen food obtained by freezing an ice cream mix, with or without the incorporation of air;
(b) may contain cocoa or chocolate syrup, fruit, nuts or confections;
(c) shall contain not less than
  (i) 36 per cent solids,
  (ii) 10 per cent milk fat or, where cocoa or chocolate syrup, fruit, nuts, or confections have been added, 8 per cent milk fat, and
  (iii) 180 grams of solids per litre of which amount not less than 50 grams shall be milk fat, or, where cocoa or chocolate syrup, fruit, nuts or confections have been added, 180 grams of solids per litre of which amount not less than 40 grams shall be milk fat; and
(d) shall contain not more than
  (i) 100,000 bacteria per gram, and
  (ii) 10 coliform organisms per gram,

as determined by official method MFO-2, Microbiological Examination of Ice Cream or Ice Milk, November 30, 1981.



Aerobic Colony Counts as viewed through a Quebec Colony Counter

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Coliforms

		Indicator Test Result (CFU [1] / gram)	
Food Group	**Indicator Test**	**Satisfactory[2]**	**Unsatisfactory[2]**
All Foods EXCEPT[3] - fresh fruit & fresh vegetables or foods containing these as an ingredient (eg, sandwiches with lettuce or sprouts, pasta salad with fresh green onion)	Total Coliforms	< 100	> 1000
All Foods EXCEPT[3] - fresh fruit & fresh vegetables or foods containing these as an ingredient (eg, sandwiches with lettuce or sprouts, pasta salad with fresh green onion)	Fecal Coliforms	< 3	> 3
All FOODS[3]	*E. coli*	< 3	> 3

Coliforms and *E.coli*

Enterobacteriaceae	**Gram negative** bacteria that ferment **glucose**, reduce nitrate, oxidase negative.
Total coliforms	**Gram negative** bacteria that ferment **glucose and lactose**, grow at 35^{o}C.
Fecal coliforms	**Gram negative** bacteria that ferment **glucose and lactose**, grow at 44.5^{o}C.
E. coli	**Gram negative** bacteria that ferment **glucose and lactose**, grow at 44.5^{o}C, and reduce MUG.

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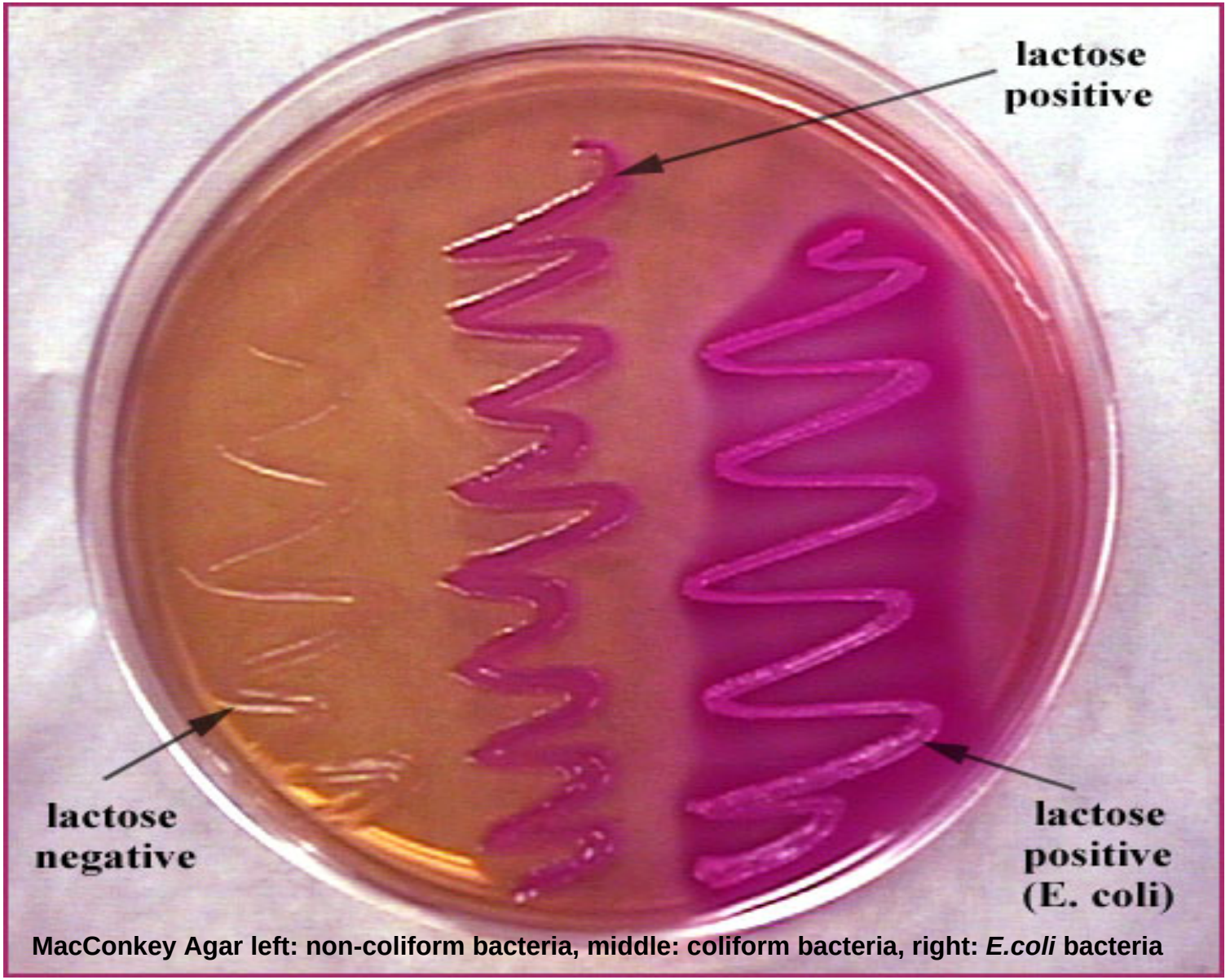

MacConkey Agar left: non-coliform bacteria, middle: coliform bacteria, right: *E.coli* bacteria

» Source: http://www.mc.maricopa.edu/~johnson/labtools/Dbiochem/3mac.jpg

Enzyme Substrate Differentiation

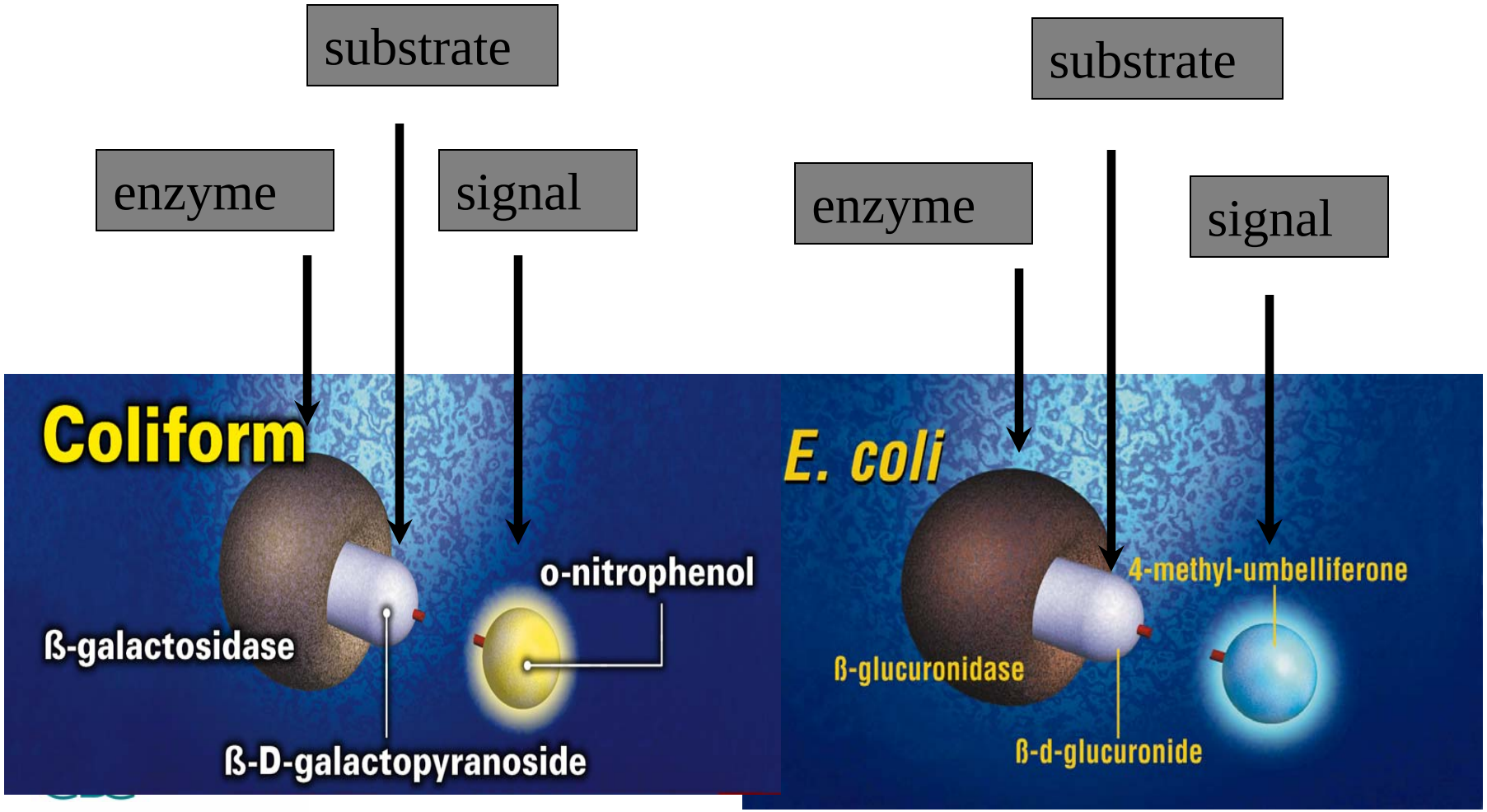

Photo from IDEXX

Environmental Sampling

- Use of swabs or sponges to check for hygiene

Interpretation	Sponges or Swabs (total CFU)	Log conversion	Counts on Surface based on 25 cm^2 surface area sampled.
Clean	< 45	< 1.65	Less than 5 CFU per cm^2
Contaminated	140 to 260	2.15 – 2.41	~ 5 to 10 CFU per cm^2
Very Contaminated	> 260	> 2.41	Greater than 10 CFU per cm^2

What to Test (examples)

A. Process control & hygiene: to determine if cleaning & sanitation has been done correctly. Samples are taken of surfaces, equipment and items after cleaning & sanitation steps performed to assess effectiveness of hygiene process.	1	Dishes after dishwashing
	2	Cutting boards
	3	Machines (belts or cutting blades)
	4	Aprons
	5	Any cleaned and sanitized surface
B. Educating client about hygiene in facility. Sampling may occur during routine inspection when poor practices are observed. Samples are taken of any surface to show presence of bacteria, and reinforce need for correct practices and cleaning. Examples, daycares, restaurants, community care facilities, schools, petting zoos, tattoo & body piercing / nail & manicure establishments.	1	Cutting boards
	2	Machines (belts or cutting blades)
	3	Aprons
	4	Hands
	5	Door knobs, door handles or any handle (coolers → bathrooms)
	6	Diaper changing areas
	7	Common touch areas in daycare
	8	Absorbent toweling

Recent References

- Food Protection Trends November 2006; 26(11),786-792.
  Identity and Numbers of Bacteria Present on Tabletops and in Dishcloths Used to Wipe Down Tabletops in Public Restaurants and Bars
  → found dishcloths contaminating surfaces - monitoring of linen sanitation solutions inadequate

- Food Protection Reports November 2006, p 7.
  Studying Microbial Loads in Food Service Settings
  → in a survey of restaurants, LTCFs, daycares and hospitals they found that hospitals and LTCF's had the lowest coliform levels on food service tables. Placemats (paper tray covers) successful barrier to bacteria found on food service tables.