FOOD SAFETY ISSUES FOR HANDLING & PROCESSING OF DAIRY FOODS

Pathogenic E.*coli*

Background

The general term for lactose fermenting gram-negative rods that inhabits the intestinal tract of man and other animals. Coliform infections are usually not contagious and are due to unsanitary environmental conditions. Common coliform bacteria include: Escherichia, Klebsiella, Enterobacter, Citrobacter and may include Serratia, Enterobacteri aerogenes, K. pneumoniae and Edwardsiella. Coliforms are normally free-living saprophytes and may be found in many areas of the environment including in soil, on plants, wood, leather, etc.

What is Escherichia *coli*

A major bacterial food pathogen – Escherichia (E.) *coli* are bacteria commonly found in the gastrointestinal tract of people and animals. The presence of E. *coli* along with many other kinds of bacteria within our intestines, are necessary for normal bowel operation and general health. There are many different strains of E. *coli*, microbiologists classify into more than 170 serogroup & within each serogroup there are one or more serotypes. The serotype 0157:H7 has been isolated and firmly associated with foodbourne illness and outbreaks of haemorrhagic colitis and haemolytic uremic syndrome (HUS). The 0157:H7 serotype has been designated as enterohaemorrhagic E. *coli* (EHEC). Some types of E. *coli* can produce toxins, these are called 'Shiga toxigenic E. *coli* (STEC) a strain of an STEC E. *coli* is 0157.

Consumption of food containing certain species of E. *coli* may lead to the development of disease. The 0157:H7 serotype toxin can damage the lining of your intestines and cause other symptoms including; low-grade fever, nausea/vomiting, severe abdominal cramps, watery and bloody diarrhea, & fatigue.

Symptoms usually appear within 2 to 5 days after you eat contaminated food or drink and may last for 8-10 days. Most people recover completely from the disease however, those most at risk & susceptible are the elderly, pregnant women & those with poorly functioning immune systems. In extreme examples (blood infection) septicemia, (the very young can also suffer meningitis) & kidney failure due to (HUS) which can occur, which can result in life-long health care complications (high blood pressure, paralysis, seizures & blindness) & death.

Where does it come from?

E. *coli* can be found in a variety of foods and liquids; undercooked or raw meats, salami, alfalfa sprouts, lettuce, spinach, unpasteurised milk & dairy products, apple juice, (non-potable) water and post-pasteurisation contamination.

Escherichia *coli* can be spread by direct contact with an infected food handler, product or food preparation surface. E. *coli* can also be spread by poor handling, operational & staff hygiene practices with contaminated utensils & non-potable water.

(Dairy) Food manufacturing contamination issues

- Cross contamination & premises hygiene
- Poor handling & personal hygiene practices
- Heat treatment being inadequate
- Employee & visitor hygiene & sickness
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- Pests & waste management
- Cracks and crevices in equipment
- Handling of surface ripened cheeses when turning and surface smearing
- Contaminated brine
- Re-work & reprocessing

Effective means of control

- Staff induction, training & basic hygiene instruction for food handlers
- Effective cleaning & verification (swabbing)
- Effective pasteurisation & control of post pasteurisation contamination risks
- Isolate raw milk and no cross connections to finished product e.g. C.I.P. (cleaning in place)
- Control of entry & storage of ingredients
- Finished product testing (including new product/process trialling)
- Premises & equipment maintenance
- Control & limit entry of visitors / tanker drivers & forklifts
- Isolate receival area and personnel from processing and packing activities

Information Sources:

NSW Food Authority - Fact Sheet (Pathogenic E. *coli*),
Centers for Disease Control and Prevention: www.cdc.gov
Royal Children's Hospital (Victoria) www.rch.org.au
National Institute of Allergy and infectious Disease: www3.niaid.nih.gov.