

# Beef carcass decontamination

Increase safety of fresh beef with PURAC FCC



- ▶ 90-99% pathogen kill
- ▶ Reduce safety recalls
- ▶ APC reduction
- ▶ Natural ingredients
- ▶ Easy to use

Consumers expect manufacturers to produce safe and wholesome meat products. Although animal muscle is essentially sterile, exterior surfaces are highly susceptible to microbiological contamination by pathogens during processing. Corbion Purac offers a natural surface treatment solution which enable producers to add an extra hurdle in the processing line and produce the safest meat products possible.

PURAC® has decontamination properties which can be used throughout processing to reduce the microbial load of fresh meat. PURAC is sprayed or misted directly upon the surface of the carcass. For this application it is advised to use PURAC FCC at 2-5% concentration and a temperature of 45-55°C.

Reductions of 1-3 logs (90-99.9%) of *Salmonella* and *E.coli* O157:H7 are generally observed and the total plate count is also reduced, though such reduction mostly depends on the initial levels of the micro-organisms.

Treatment is most effective without rinsing off PURAC FCC. Lactic acid initially reduces the pH of the meat surface. The pH will be reset in the hours afterwards. Applying PURAC FCC does not result in any residual effects nor relevant changes of the lactic acid concentration in the meat. This is explained by Lactic acid being a natural constituent of the beef tissue.

Applying lactic acid does not impact the color of the skin nor impact the weight of the carcass.

# Fresh meat decontamination

## Increase safety of fresh beef



### APC count on beef carcasses

Case study 1: The efficacy of lactic acid spray was measured in a test with chilled beef carcasses. Beef surface was treated by spraying water and water with 4% lactic acid on the surface (room temperature). Aerobic Plate Count (APC) was reduced with almost 2 log cfu.

### E.coli count on beef carcass

Case study 2: To examine efficacy of lactic acid on *E.coli* O157:H7, beef carcasses were inoculated and treated pre-chill with hot water wash (35°C/95°F) followed by a lactic acid spray (2%, 55°C/131°F). Lactic acid treatments resulted in a 5 log reduction of *E.coli* (figure 2).

### Regulatory

#### USA

Lactic acid is approved by the Food Safety and Inspection Services (FSIS) for use as a part of a HACCP plan to reduce pathogenic bacteria on the surface of livestock carcasses, primal and trimming (beef and pork). It is Generally Recognized as Safe (GRAS) by the Food and Drug Administration (FDA). FSIS approvals allow for the use of up to 5% lactic acid as an antimicrobial agent to treat livestock (beef and pork) prior to fabrication (pre-chill and post-chill). It is considered a processing aid when used on treated carcasses or the products produced from treated carcasses.

#### EU

Article 3 (2) of Regulation (EC) No 853/2004 provides a legal basis to remove surface contamination from products of animal origin. In 2011, the EFSA/BIOHAZ panel published a scientific opinion reviewing decontamination treatment of beef with lactic acid. This opinion positively reviewed lactic acid as a decontaminating agent, concluding it is both safe and efficient to use in beef slaughterhouses. Regulation (EC) No 101/2013 of 4 February 2013 describes that lactic acid may be used in the European Union to reduce microbiological surface contamination on bovine carcasses or half carcasses or quarters at the level of the slaughterhouse.

### APC and E.coli count on beef carcass

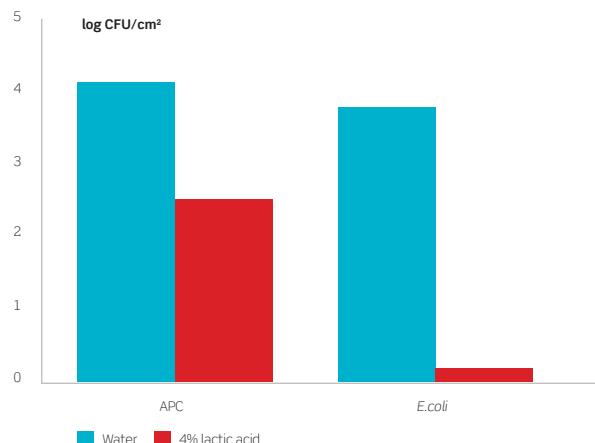


Figure 1

(Gill and Badoni 2004)

### E.coli O157:H7 count on beef carcass

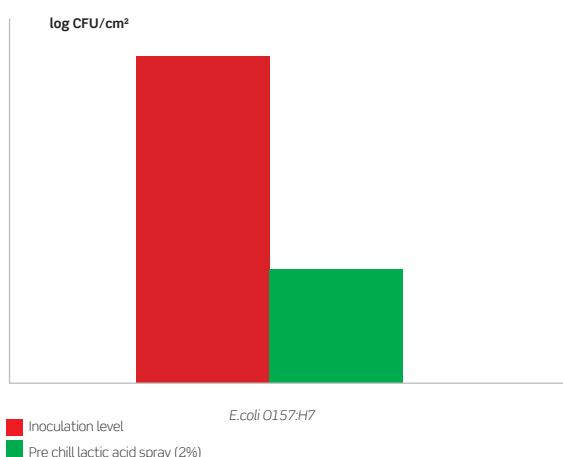


Figure 2

(Castillo 2001)

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With over 80 years of fermentation expertise and the use of natural raw materials to produce exceptional food and beverage ingredients, Corbion Purac has a wealth of expertise in the world of biobased food ingredients. Corbion is the global market leader in lactic acid, lactic acid derivatives and lactides, and a leading company in functional blends containing enzymes, emulsifiers, minerals and vitamins. Corbion operates 10 production plants, in the USA, the Netherlands, Spain, Brazil and Thailand, and markets its products through a worldwide network of sales offices and distributors.

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