

Activated Lactoferrin

INTERVENTION SUMMARY	
Status	Currently Available
Location	Post slaughter on carcass or at packaging/retail.
Intervention type	Surface treatment
Treatment time	No-rinse application
Regulations	Approved in the US, not in the EU or Australia
Effectiveness	reported to be good
Likely Cost	Likely to be high capital cost. Activin is a patented process aid that is electrostatically sprayed onto carcasses in a uniquely engineered spray cabinet
Value for money	Likely to be good
Plant Process Changes	Minimal process changes Significant equipment changes – special cabinet required
Environmental impact	Lactoferrin may interfere with effluent treatment through its antibacterial and iron-binding properties
OH&S	No hazards documented
Advantages	No effect on taste, colour or nutritional quality of meat
Disadvantages or Limitations	Capital costs for set-up of application

Activated Lactoferrin

Lactoferrin is a naturally occurring antimicrobial found in milk, saliva and tears, and in trace quantities in meat tissue. A USA company, aLF Ventures, has gained approval for the application of an activated form of lactoferrin (ALF) for carcasses – Activin™. The ‘activation’ of lactoferrin is a patented process. ALF can be sprayed onto a carcass to help prevent bacterial contamination during processing or it can be applied to a subprimal or finished beef surface prior to final packaging. The recommended level is 2%. It is reported to improve the safety of beef and poultry by interfering with adhesion/colonization, detaches microorganisms from biological surfaces, inhibits multiplication, and neutralizes the activity of endotoxins.

Lactoferrin binds iron and also specifically disrupts cell membranes. Experiments have demonstrated that ALF has activity against a variety of foodborne pathogens such as *E. coli* O157:H7, *Listeria monocytogenes* and *Salmonella*, and also spoilage bacteria (Naidu 2000). There is limited information available on comparative evaluations against other chemical food safety treatments. A recent US study looked at the shelf life of ready-to-eat meat products that were treated with ALF after inoculation with microorganisms, then vacuum-packed and stored at 10-12°C (i.e. temperature abused) for 33 days. The full results are not as yet published in a journal, but the interim report of the study implies that activated lactoferrin is efficacious in inhibiting the growth of *E. coli* O157:H7, *Salmonella* Typhimurium and *Listeria monocytogenes* on vacuum-packaged bologna and beef cuts (Ransom and Belk, 2003).

ALF is approved for use in the US on beef carcasses at concentrations of up to 2% in water, and its suggested use is as a final rinse following hot water rinsing. There has been interest from the US beef industry and some commercial uptake has occurred. Currently it is not permitted in the EU.

Environmental issues

Lactoferrin may interfere with effluent treatment through its antibacterial and iron-binding properties.

Proponent/Supplier Information

ALF is manufactured by National Beef Company in the USA (A joint venture between aLF Ventures LLC and DMV International). Contact them via e-mail or the website for further information:



Meat Industry Services

Supported by:



National Beef Company

12200 N. Ambassador Drive, Suite 500

Kansas City, MO 64163

<http://www.nationalbeef.com/activinFAQ.stm>

References

Naidu, A. S. (2000) Activated lactoferrin: A new approach to food safety. Food Technology **56**: 40-45.

Ransom, J., Belk, K. (2003) Susceptibility of *Escherichia coli* O157:H7, *Salmonella* Typhimurium, and *Listeria monocytogenes*, inoculated onto beef tissues, steaks and RTE products, to lactic acid, lactoferrin and activated lactoferrin.

<http://www.beef.org/uDocs/ACF3AA5.pdf>