

## Activated Lactoferrin

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