

Organic acid combinations

INTERVENTION SUMMARY	
Status	Currently available
Location	Post slaughter
Intervention type	Surface treatment – usually spray application
Treatment time	Unknown
Regulations	Peroxy acids are approved in the US and Australia
Effectiveness	Hard to ascertain
Likely cost	Hard to ascertain
Value for money	Hard to ascertain
Plant or process changes	Spray cabinet is required
Environmental impact	Effluent must be treated
OH&S	Peroxyacetic acid is an irritant Secure storage and safe handling of the undiluted chemical is required Risk of inhalation
Advantages	Inexpensive
Disadvantages or limitations	Possible discolouration of the lean if used at high concentrations Possible residual compounds and fat oxidation depending on the concentration applied. Requires refrigerated storage

Disclaimer

Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests.

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The use of organic acids to inactivate pathogenic bacteria in fresh food has been studied extensively. Protonated organic acids diffuse across bacterial cell membranes, dissociate in the cell cytoplasm, reduce the intracellular pH and lead to cessation of growth or cell death (1-3).

Peroxychem produces Blitz™, a peracetic acid-based antimicrobial agent for use in red meat applications. It can be applied directly to red meat carcasses, parts, trim and organs to effectively reduce contamination of pathogenic bacteria, *Escherichia coli*, *Salmonella typhimurium* and *Listeria monocytogenes* as well as other bacteria that may result in product spoilage or decay. It is permitted for use in the processing of organic red meat in accordance with 7 C.F.R. 205.605.

Ecolab produces the SANOVA® Antimicrobial System, which can be added to red meat parts and trim, just prior to grinding. Ecolab report that ground beef products treated with SANOVA® twice, result in a 4-log reduction in *Listeria*, *Salmonella* and *E. coli* O157:H7. Ecolab also produces Octa-Gone® which has been reported to control *Listeria* on deli meat surfaces. Ecolab report that Octa-Gone® treatment alone achieved a >1-log reduction in *Listeria monocytogenes*; but when combined with a short term heat treatment using a modified shrink tunnel, a >2-log reduction was achieved.

BioSafe Systems produces SaniDate®FD, a 15% peroxyacetic acid-based microbiocide developed for use in meat, poultry, and seafood processing facilities. When used as directed, it will help to reduce contamination and cross-contamination in food processing. This product is intended to be used as an antimicrobial agent to control microorganisms in process water and ice used in the production and preparation of poultry, shell eggs, meat, fish and seafood. SaniDate®FD may be applied in process water and/or ice used for washing, rinsing, storing or cooling of whole or cut meat including carcasses, parts, trim and organs.

CraftChem, Inc. produces the Paracet range, which are peracetic acid-based antimicrobial agents. Paracet is approved for direct contact with food by the FDA and is an effective antimicrobial for *Staphylococcus aureus*, *E. coli* and *Listeria*. Diversey, Inc. and Cryovac, Inc. (now part of SealedAir) produce a mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphoric acid (HEDP), water, and optionally sulfuric acid as a catalyst. This solution can be used for a variety of applications, including for washing, rinsing, storing, or cooling whole or cut meat, including

carcasses, parts, trim, and organs and, as an application for washing, rinsing, storing, or cooling of processed and preformed meats and poultry.

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References

1. Russell, J. B. (1992) Another explanation for the toxicity of fermentation acids at low pH: anion accumulation versus uncoupling. *Journal of Applied Bacteriology* 73, 363-370
2. Gonçalves, D. L. M., Ramos, A., Almeida, S. J., Xavier, B. A. M. R., and Carrondo, T. M. J. (1997) Elucidation of the mechanism of lactic acid growth inhibition and production in batch cultures of *Lactobacillus rhamnosus*. *Applied Microbiology and Biotechnology* 48, 346-350
3. Ricke, S. (2003) Perspectives on the use of organic acids and short chain fatty acids as antimicrobials. *Poultry Science* 82, 632-639