

## Acidic Calcium Sulphate

INTERVENTION SUMMARY	
<b>Status</b>	Currently available
<b>Location</b>	Packaging/Retail
<b>Intervention type</b>	Incorporated into meat products
<b>Treatment time</b>	Storage life of product
<b>Regulations</b>	Approved in the US, but not in the EU and Australia
<b>Effectiveness</b>	Not yet clearly identified
<b>Likely cost</b>	Not known
<b>Value for money</b>	Difficult to ascertain
<b>Plant or process changes</b>	Minimal
<b>Environmental impact</b>	Not known
<b>OH&amp;S</b>	Not known
<b>Advantages</b>	Acts on packaged product, so removes risk of recontamination
<b>Disadvantages or limitations</b>	Possible organoleptic effects Considered a food additive so must be declared in the labelling.

### 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.

## Acidic Calcium Sulphate

Acidic calcium sulphate (ACS) is a very acidic (pH 1.0-1.5) blend of calcium hydroxide, sulphuric acid and calcium sulphate. This chemical could be used to decrease pathogen levels, as well as to extend the shelf life of the treated products. It has also been shown that ACS has minimal corrosive properties to plastics, rubber, stainless steel or human skin. Therefore, its application is thought to be suitable for ground meat and meat products.

At present, use of ACS in the production of meat and poultry products has only been approved as a secondary food additive in the US (USDA/FSIS, 2013).

Several studies, have evaluated the efficacy of ACS alone or in combination with organic acids in reducing bacteria on beef and poultry carcass surfaces (Dickens *et al*, 2004; Nunez de Gonzalez *et al.*, 2004; Zhao *et al.*, 2004). It has been demonstrated that spraying a higher concentration of ACS (4 ml/wing) increased the shelf life of chicken wings from 7 to 10 days when compared with deionized water-spray controls (Dickens *et al.*, 2004). ACS reduced counts of *Pseudomonas* sp., *Staphylococcus* sp., *L. monocytogenes* and psychrotrophs by up to 2.2 log units at the end of 10 days refrigerated storage. Nunez de Gonzalez *et al.* (2004) reported the potentials for using ACS with propionic acid and/or lactic acid as a post-processing dipping solution to inhibit or control the growth of *L. monocytogenes* on vacuum-packaged frankfurters. Furthermore, addition of ACS and lactic acid to ground beef has been shown to increase the thermal sensitivity of *E. coli*, reducing their ability to survive during heating (Zhao *et al.*, 2004).

### Proponent/Supplier Information

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## References

Dickens, J. A., Ingram, K. D., Hinton, A. Jr. (2004) Effects of applying Safe2O poultry wash to broiler wings on shelf life, *Listeria monocytogenes*, *Pseudomonads*, *Staphylococcus species*, and psychrotrophic bacteria levels after three, seven, and ten days of storage. Poultry Science **83**: 1047-1050.

USDA/FSIS (2013), Safe and suitable ingredients used in the production of meat, poultry, and egg products. FSIS Directive 7120.1 Revision 17.

Nunez de Gonzalez, M., Keeton, J. T., Acuff, G. A., Ringer, L. J., Lucia, L. (2004) Effectiveness of acidic calcium sulfate with propionic and lactic acid and lactates as postprocessing dipping solutions to control *Listeria monocytogenes* on frankfurters with or without potassium lactate and stored vacuum packaged at 4.5°C. Journal of Food Protection **67**: 915-921.

Zhao, T., Doyle, M. P., Kemp, M. C., Howell, R. S., Zhao, P. (2004) Influence of freezing and freezing plus acidic calcium sulfate and lactic acid addition on thermal inactivation of *Escherichia coli* O157:H7 in ground beef. Journal of Food Protection **67**: 1760-1764