Carnobacterium

INTERVENTION SUMMARY	
Status	FSIS no objection, Australia and EU unknown
Location	Raw meats, smallgoods, RTE meats, Post-processing
Intervention type	Surface application to products
Treatment time	Shelf life of product
Regulations	GRAS 000305 *Carnobacterium maltaromaticum* strain CB1 at intended use levels of $1x10^4$ – $1x10^9$
Effectiveness	Reduction in *Listeria* counts up to 3 $\log_{10}$ cfu/g
Likely cost	unknown
Value for money	unknown
Plant or process changes	Minimal
Environmental impact	Minimal
OH&S	None
Advantages	Natural product
Disadvantages or limitations	Unknown if high numbers will affect shelf life

Carnobacterium

Carnobacterium are a member of the broader lactic acid bacteria group. This organism is frequently isolated from products and environment of dairy, meat, fish and shrimp (1). *Carnobacterium maltarmaticum* CB1 has been granted GRAS status for use in RTE meat products, meat, poultry and fish products, frozen meals, processed fruit salads, vegetable salads, sauces and soft cheeses at levels from $1x10^4$ – $1x10^9$ cfu/g (2). Heat treated *C. maltaromaticum* may be used as a preservative to inhibit the growth of *Listeria* at up to 5000ppm (2).

Carnobacterium has been studied as a protective culture in order to inhibit growth of *Listeria monocytogenes*. This lactic acid bacteria is effective in controlling the outgrowth of *Listeria* at 4 and 8°C with a reduction of approximately 3 $\log_{10}$ cfu/g after 35 days on chorizo and morcilla (black pudding) style products (3). The FSIS has ”no objection” for use of *C. maltaromaticum* in conjunction with sodium diacetate and sodium acetate in meat and poultry products (4).

Proponent/Supplier Information

Griffith Laboratories
http://www.griffithfoods.com/Pages/default.aspx

References

1. Leisner, J. J., Laursen, B. G., Prevost, H., Drider, D., and Dalgaard, P. (2007) Carnobacterium: positive and negative effects in the environment and in foods. *Fems Microbiol. Rev.* 31, 592-613

2. FDA. 2009 GRAS No 305 Viable and heat treated *Carnobacterium maltaromaticum* CB1. Available at http://www.fda.gov/downloads/Food/IngredientsPackagingLabeling/GRAS/NoticeInventory/ucm269418.pdf. Accessed June 2016.

3. Gonzalez, M. I., Yien, W., Castrillon, J. A., and Ortega, A. (2013) Addition of *Carnobacterium maltaromaticum* CB1 in vacuum packaged chorizo and morcilla, to inhibit the growth of *Listeria monocytogenes*. *Vitae* 20, 23-29

4. FSIS. 2016 Food Safety and Inspection Service new technology information table. Available at http://www.fsis.usda.gov/wps/wcm/connect/849de831-41cb-4e72-bbb4-4265240af51e/new-technologies-table.pdf?MOD=AJPERES. Accessed June 2016.