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S. Harouna, J.J. Carramiñana, F. Navarro, M.D. Pérez, M. Calvo, L. Sánchez

PII: S0956-7135(14)00446-0

DOI: 10.1016/j.foodcont.2014.07.061

Reference: JFCO 3997

To appear in: *Food Control*

Received Date: 19 February 2014

Revised Date: 15 July 2014

Accepted Date: 29 July 2014

Please cite this article as: HarounaS., CarramiñanaJ.J., NavarroF., PérezM.D., CalvoM. & SánchezL., Antibacterial activity of bovine milk lactoferrin on the emerging foodborne pathogen *Cronobacter sakazakii*: effect of media and heat treatment, *Food Control* (2014), doi: 10.1016/j.foodcont.2014.07.061.

# Antibacterial activity of bovine milk lactoferrin on the emerging foodborne pathogen *Cronobacter sakazakii*: effect of media and heat treatment

S. Harouna[a], J.J. Carramiñana[b], F. Navarro[a], M.D. Pérez[a], M. Calvo[a], L. Sánchez[a]*

[a]*Tecnología de los Alimentos,* [b]*Nutrición y Bromatología, Facultad de Veterinaria, Universidad de Zaragoza, Miguel Servet, 177, 50013 Zaragoza, Spain*

* Corresponding author. Tel.: +34 976761585; fax: +34 976761612.

*E-mail address*: lousanchez@unizar.es (L. Sánchez).

## ABSTRACT

*Cronobacter sakazakii* is a pathogen transmitted by food, with high osmotic resistance and tolerance to desiccation, which affects mainly to newborns, infants and immunocompromised adults. *C. sakazakii* infection in infants has been associated with consumption of powdered milk. The purpose of this study was to evaluate the antibacterial activity of native and iron-saturated bovine lactoferrin (bLF) (from 0.5 to 5 mg/ml) on non-desiccated and desiccated *C. sakazakii* ($10^4$ CFU/ml) in different media (phosphate buffer, bovine skim milk and whey). In general, native bLF was the only effective form that inhibited growth of *C. sakazakii* in all media, its activity increasing with concentration and time of incubation. These results suggest that the antibacterial effect of bLF on *C. sakazakii* is mainly due to iron sequestration. However, iron-saturated bLF showed some effect by reducing the viability of *C. sakazakii* in whey. There has not been observed an increased sensitivity of desiccated bacteria to native bLF in phosphate buffer. However, although the antibacterial activity of native bLF against non-desiccated *C. sakazakii* was drastically reduced in milk or whey compared to phosphate buffer, there was a certain activity when it was assayed against desiccated cells in those media. The effect of some heat treatments on the antibacterial activity of native bLF was evaluated and only those of 72℃ for 15 s, 85℃ for 15 s, and 63℃ for 30 min maintained its whole activity.

*Keywords:* bovine milk lactoferrin, *Cronobacter sakazakii,* antibacterial activity, heat treatment, UHT milk, whey