

TITLE: EVALUATION OF THE EFFICIENCY OF COMMERCIAL SANITIZERS IN THE INACTIVATION OF *Listeria monocytogenes* PRESENT IN BOVINE SLAUGHTERHOUSES

AUTHORS: TEIXEIRA, L.A.C.; CARVALHO, F. T.; CARVALHO, R.C.T .; FIGUEIREDO, E.E.S

INSTITUTION: UNIVERSIDADE FEDERAL DE MATO GROSSO (UFMT), PROGRAMA DE PÓS-GRADUAÇÃO EM NUTRIÇÃO ALIMENTOS E METABOLISMO (PPG-NAM), LABORATÓRIO DE MICROBIOLOGIA MOLECULAR DE ALIMENTOS (LABMMA), AV. FERNANDO CORRÊA DA COSTA, Nº 2367 - BAIRRO BOA ESPERANÇA. CEP 78060-900, CUIABÁ – MT, BRASIL.

ABSTRACT:

It is difficult to control contamination by *Listeria monocytogenes* in the food industry, due to its widely spread presence and adaptation, influenced by the support and biofilm formation ability of this microorganism. Studies indicate that these formations are capable of developing adaptive characteristics in response to repeated exposure to biocides, expressing stress-associated genes that confer resistance to sanitizers. In this study, we evaluated the efficiency of commercial sanitizers used in the processing environment of meat products on the inactivation of *Listeria monocytogenes*. A total of 7 *L. monocytogenes* isolates obtained from cooled fresh beef produced in the state of Mato Grosso, Brazil were subjected to sensitivity evaluations to Quaternary Ammonia (QA), Benzalkonium Chloride (CB), Chlorhexidine (CX), Periotic acid (AP) and Sodium Hypochlorite (HS) using the BHI broth macro-dilution method associated with plating and counts on mueller hinton agar, to determine the minimum inhibitory concentration (MIC), i.e., the lowest concentration of antimicrobial agent that inhibits 80% or more of the growth of the organism in test tubes. The QA commercial solution (20g/100mL) showed a MIC between 0.0001 and 0.0016 g/100mL, CB (50g /100mL ranged from 0.0001 and 0.0020g/100mL, CX (2g/100 mL) from 0.0008 to 0.0020g/100mL, and AP from 0.0012 to 0.0375g/100mL. These sanitizers presented MIC below the concentrations indicated for the hygiene of the food processing environments, and were thus revealed to be efficient for this purpose. Regarding HS (12g/100mL), six isolates showe resistant, with MIC between 1.5 and 6 g/100mL, higher than the 1 to 2% concentration recommended by the manufacturer for sanitization of industrial environments. The ease of use and low cost make chlorinated agents the most frequent choice in the food industry and the presence of resistant strains in this environment confers risks of cross contamination, due to the ease of dissemination of *L. monocytogenes* and its ability to form biofilms. The results reported herein, thus lead to the recommendation of replacing HS by QA, CB, CX or AP.

Key words: Chlorhexidine; peracetic acid; quaternary ammonia; benzalkonium chloride; sodium hypochlorite.

Agency: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq/ Brasil)