

TITLE: NON-HEMOLYTIC *Listeria monocytogenes* IN THE CHICKEN MEAT CHAIN

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ABSTRACT:

L. monocytogenes is the pathogen responsible for causing a serious foodborne illness named listeriosis. Among these virulent factors, the *hly* gene is the primary determinant of the pathogenicity of *L. monocytogenes* strains. This gene is responsible for the expression of the protein Listeriolysin "O" (LLO), which gives the gene its hemolytic phenotype. The objective of the present study was to identify non-hemolytic *L. monocytogenes* strains in poultry processing. A total of 38 *L. monocytogenes* isolates isolated from knife or board swabs, from chilled or frozen poultry carcasses and poultry meat cuts, were identified by biochemical, phenotypic testing and real time PCR (qPCR) to amplify a 100 base pair (bp) fragment of the *hly* gene. The hemolysis capacity of the all isolates was verified in blood agar, applying the ALOA® One Day Method and CAMP test. Seven non-hemolytic *L. monocytogenes* strains were identified. Although non-hemolytic *L. monocytogenes* strains have been previously reported, the results found herein are of great importance to public health, since the poultry meat would be wrongfully considered negative for *L. monocytogenes* and the product would be considered safe for the consumer market. Furthermore, this misidentification may favor the persistence of *L. monocytogenes* in an industrial environment and perpetuate contamination in the handling sectors and, consequently, in the final products. These results emphasize the ineffectiveness of the differentiation method of these species based only on hemolysis evidence. Such reports reinforce the hypothesis that the phenotypic methods of differentiation between species are subject to errors when treating atypical strains. Thus the use of qPCR regarding the *hly* gene in validating quality control programs in poultry slaughterhouses is essential for the detection and/or identification of *L. monocytogenes*, allowing investigators to locate possible sources of contamination in the flowchart and ensuring product safety.

Keywords: *hly* gene, listeriolysin, hemolysis capacity

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