

Title: WHEY AS TOOL TO CONTROL CLOSTRIDIAL DISEASES**Authors:** Dailoff, G.^{1,2}, Redondo, L.^{1,2}, Diaz Carrasco J.^{1,2}, Fernández Miyakawa, M^{1,2}.**Institution:** 1 Instituto de Patobiología, Centro de Investigación en Ciencias Veterinarias y Agronómicas, Instituto Nacional de Tecnología Agropecuaria, Buenos Aires, Argentina. 2 Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina**Abstract:**

Whey is a by-product derived from the cheese industry, as a result of precipitation of casein, which was generally discarded. This product is composed of lactose and serum protein such as alpha-lactalbumin; beta-lactoglobulin; immunoglobulins; bovine serum albumin; bovine lactoferrin, glycomacropptide, among others. As precursor proteins, small bioactive peptides emerged from them. The release of the bioactive peptides can be generated by different methods of hydrolysis as temperature and protease treatments. These peptides have different properties as antimicrobial activity against gram positive bacteria. *Clostridium perfringens* is an anaerobic bacillus gram positive and a causal agent of several enteric diseases in animals and humans. In the present work, whey was hydrolyzed in solution and solid state for obtaining peptides with antimicrobial activity against *C. perfringens*. For this purpose an industrial whey solution (500 mg/ml) was treated at 37°C, 48°C, 80°C for 24 h, 48 h, 72 h. For dry heat treatment (I) and wet heat (II), 2.5 g industrial whey was used and was hydrolyzed at 95°C for 24 hours (I) and 115°C for 10 min and 121°C for 15 min (II). Hydrolysis is also performed by the action of proteases; 500 ul of 500 mg/ml of industrial whey solution was incubated for 2 h with pepsin and papain at 37°C and room temperature respectively. Subsequently inhibitory activity of hydrolysates was tested against *C. perfringens* ATCC 13124 in which was observed the presence of inhibition zones for temperature treatments, except whey solution treated at 80°C for 24 h, 48 h, 72 h and whey treated by wet heat at 121°C for 15 min. For hydrolysates with proteases, no zones of inhibition were observed. In conclusion, hydrolysate of this product could be used as an antimicrobial agent and the products resulting from them are proposed as a tool to control clostridial enteric diseases in animals and humans by means of GRAS food safe components.

Keywords: whey hydrolysate, *Clostridium perfringens*, antimicrobial activity.**Funding source:** Proyecto INTA pnsa 1115056