EXPRESSION AND PURIFICATION OF *Cryptosporidium parvum* COWP1 RECOMBINANT PROTEIN IN *Escherichia coli*

DÉBORA REGINA ROMUALDO DA SILVA[1], GUSTAVO FELIPPELLI[1], MARCELO VASCONCELOS MEIRELES[1], ALEX AKIRA NAKAMURA[1]

[1]SÃO PAULO STATE UNIVERSITY (UNESP), SCHOOL OF VETERINARY MEDICINE, ARAÇATUBA, SÃO PAULO, BRASIL.

Recombinant proteins are potential candidates for the development of new drugs, vaccines and new diagnostic and treatment methods, being obtained by inserting the target gene into expression vectors, which are molecularly cloned in heterologous systems to be translated and be produced in large quantities, thus improving sensitivity in diagnostic tests. Normally, its production is carried out in *Escherichia coli* expression systems, allowing the rapid expression of heterologous genes. The use of IgY is still poorly explored, having advantages such as: large quantity production, high affinity and specificity of antibodies and lower cost, among others. Oocyst wall proteins (COWP) are a group of proteins that are in the wall of oocysts and are involved in their structure and resistance under environmental conditions, which makes them a potential target for cloning in *E. coli* heterologous expression system. Thus, the development of diagnostic methods using chicken IgY and using the COWP1 protein as a template provides the design of a promising diagnostic tool, in addition to expanding knowledge for future studies. The full-length nucleotide sequence of *C. parvum* COWP1 gene was synthesized in PUC57 plasmid by GenScript (USA). The gene sequence was inserted, cloned and expressed in *E. coli* M15 (pREP4). After the expression, products were submitted fo SDS-PAGE 16%, for viewing induced and non-induced cultures. After the protein purification was performed by affinity chromatography using Hi-Trap HP column for ÄKTA™ Pure System. The recombinant COWP1 resulting product can be useful for antibodies production and developing diagnostic assays to monitor cryptosporidiosis outbreaks.

Keywords: *Cryptosporidium*, recombinant protein, COWP.