

## **B8. PRODUCTION OF POTENTIAL CATHEPSINS D FOR THE DEVELOPMENT OF NEW AGENTS AGAINST SCHISTOSOMIASIS.**

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**INTRODUCTION** Schistosomiasis is a parasitic disease caused by trematodes of the genus *Schistosoma*, whose occurrence of different species vary according to geographical location worldwide. Here in Latin America, it is reported the presence only of *S. mansoni*. It is estimated that schistosomiasis affects 240 million people and poses a threat to more than 700 million people living in risk areas. Thus, according to the World Health Organization (WHO), schistosomiasis is the second in the list of parasitic diseases that most affect the man, one of the most widespread parasitic diseases in the world. Praziquantel is the drug of choice (and in practical means the single available) for the treatment of schistosomiasis. Besides treatment, WHO also recommends its use in preventive treatment of schistosomiasis in massive drug administration campaigns. However, although safe and effective against all the species of *Schistosoma*, successive use in endemic areas can encourage the emergence of resistance. In this context, it becomes clear the need to seek and develop new agents and therapeutic alternatives for the treatment of schistosomiasis. Proteases (or proteolytic enzymes) catalyze the hydrolysis of peptide bonds. Found in the pepsin-like family of aspartic peptidases is cathepsin D, for which has been suggested numerous physiological functions. One of them is an important role in the nutrient digestion by blood-feeding parasites of man and other animals. Thus, cathepsin D-like aspartic peptidases are recognized as potential drug targets. The development of therapeutic agents against these drug targets involves their production in heterologous expression systems. One of the eukaryotic systems that attracted significant interest in recent years is the baculovirus-infected insect cell platform.

**OBJECTIVE** Obtain *Schistosoma mansoni* cathepsin D in baculovirus systems using recombinant insect Sf9 cell cultures.

**METHODOLOGY** *Spodoptera frugiperda* insect cells (Sf9 line) were obtained from working cell bank. Sf9 cells were infected with the genetically modified baculovirus obtained through the Bac-to-Bac TOPO cloning kit. The obtained proteases were analyzed by biochemical techniques, such as electrophoresis under denaturing conditions (SDS-PAGE) and by enzyme immunoassay (*Western Blot*). Protein measurements were performed by the Bradford method at 660 nm using the Protein Assay kit (Pierce®).

**RESULTS** Due to the standardization of concentrations of the polyclonal antibodies made and through analysis by SDS-PAGE and *Western Blot*, were observed, from the supernatants of cell suspension infected with genetically modified baculovirus, protein bands corresponding to the mass molar of the positive control obtained by induction in *E. coli*, suggesting that SmCD1 and SmCD3 enzymes were expressed in Sf9 cells.

**CONCLUSION** The efficiency of the system baculovirus-infected insect cell for the production of recombinant proteins was proved, being an appropriate choice for obtaining *Schistosoma mansoni* cathepsins D.

**KEYWORDS** baculovirus, Sf9 insect cells, schistosomiasis, cathepsin D.