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Cloning and Identification of an Encystation-Specific Transcription Factor, Myb2 Protein in *Giardia lamblia*

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Giardia lamblia is a human pathogen causing outbreaks of diarrhea. Infection of a human by *G. lamblia* is initiated by the ingestion of the cysts, which then excyst to the trophozoites in the host. Being released in the feces into the external environment, cysts with a filamentous wall withstand adverse environmental stresses for prolonged periods and disseminate to other hosts. To investigate life cycle of *G. lamblia*, encystation, one of the major processes in its life cycle, was reconstituted by inducing an axenic culture of a flagellated form of *G. lamblia* into a cyst form under a high concentration of bile and alkaline pH condition.

A differential mRNA display experiment was employed in order to isolate genes induced by encystation. Isolation of *cwp1* as two of the induced cDNA clones clearly demonstrated that the experimental condition was appropriate. Three of twelve isolated cDNA clones showing an increased transcription pattern during encystation, were putatively identified to be the *myb2* gene encoding a well-known transcription factor involved in cellular development and differentiation.

The amino acid sequences of the Myb2 protein deduced from the isolated gene revealed that this Myb2 has a DNA binding domain comprising two imperfect repeats at its carboxyl-terminus. The nuclear localization of Myb2 protein during encystation was observed in vivo by expressing a Myb2-GFP fusion protein. An oligonucleotide selection experiment using the recombinant Myb2 protein suggested that Myb2 may be an DNA binding protein with a specificity for GTnG/CT (n=4 or 5). This rMyb2 protein showed specific binding to the promoters of the *myb2* and *cwp1*, which are induced genes during encystation of *G. lamblia*.

Key words: *Giardia lamblia*, encystation, DD RT-PCR, Myb2