

Thesis Title Production and Characterization of Monoclonal
Antibodies Against Metabolic Products (Excretory-
Secretory Antigens) of the Liver Fluke
(Opisthorchis viverrini)

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ABSTRACT

Opisthorchiasis is still an important public health problem in Thailand, especially in the northeastern part of the country. Current methods for the diagnosis of human liver fluke infection caused by *Opisthorchis viverrini* are based on the demonstration of eggs in either stool, duodenal fluid or bile. In order to circumvent the tedious and frequently impractical protocol for microscopic examination, the immunodiagnostic tests have been developed. Immunodiagnostic tests based on analysis of antibody in serum and bile collected from man and animals with opisthorchiasis have been developed by several groups of investigators. However, the development of specific and sensitive tests is essential if one is to have a reliable diagnosis. Much attention has been given to the purification and production of sufficient quantities of antigens

for the test. The availability of monoclonal antibodies therefore play a significant role in this aspect.

In this study, the *in vitro* metabolic products [excretory-secretory (ES) antigen] of adult *Opisthorchis viverrini* which has the 89 kD glycoprotein as its prominent component was used as an immunogen for the production of monoclonal antibody. Mice were immunized with concentrated ES antigen. Antibody reactivity and specificity of the monoclonal antibodies produced were assessed by indirect ELISA. These monoclonal antibodies were subsequently found to be specific exclusively for *O. viverrini* itself but some other also cross reacted with other parasites (*Clonorchis sinensis*, *Schistosoma mansoni*, *Fasciola gigantica*, *Gigantocotyl siamensis* and *Gnathostoma spinigerum*). Seven monoclonal antibodies were studied in details. All immunoprecipitated an antigen of M_r 89 kD from both iodinated ES and somatic extract antigen of adults *O. viverrini*. However, only 5 of these 7 monoclonal antibodies were found to react with the 89 kD glycoprotein present in both ES and somatic compartments by immunoblotting. Indirect immunofluorescence of frozen thin sections of adult *O. viverrini* showed that the epitopes reacted with these monoclonal antibodies were present in eggs, cecal surface and its secretions, tegument and tegumental cell and muscle. These monoclonal antibodies can be very helpful for the development of more specific and sensitive immunodiagnostic methods for *O. viverrini* infection. Such an attempt is now being carried out in the laboratory.