OPTIMIZATION FOR HIGH-LEVEL EXPRESSION IN *PICHIA PASTORIS* AND PURIFICATION OF TRUNCATED AND FULL LENGTH RECOMBINANT SAG2 OF *TOXOPLASMA GONDII* FOR DIAGNOSTIC USE

Lau Yee Ling, Init Ithoi and Fong Mun Yik

Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Abstract. SAG2 is one of the major surface antigens of the intracellular protozoan parasite *Toxoplasma gondii*. In the present study, truncated recombinant SAG2(S) and full length recombinant SAG2(T) of *T. gondii* were optimally produced (~15 mg/liter) in *Pichia pastoris* expression system using BMMY medium at pH 3, 25ºC in 0.5-1% methanol and a time-course of 1-2 days. The recombinant proteins were purified using a commercial gel filtration purification system obtaining ~33% recovery. The purified SAG2(S) and SAG2(T) showed molecular masses of 45 and 36 kDa by SDS-PAGE, respectively. The recombinant proteins were evaluated by Western blotting with patients' sera and demonstrated 90% sensitivity and 100% specificity for detection of toxoplasmosis. This study provided a means for large-scale expression and purification of SAG2, which should be useful for diagnosis of toxoplasmosis.

Key words: *Toxoplasma gondii*, *Pichia pastoris*, recombinant antigen, surface antigen, expression

Correspondence: Dr Lau Yee Ling, Department of Parasitology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.
Tel: 6-03-7967 4749; Fax: 6-03-7867 4754
E-mail: lauyeeling@um.edu.my