Seroprevalence of sarcocystosis in the local communities of Pangkor and Tioman Islands using recombinant surface antigens 3 (rSAG3) of *Sarcocystis falcatula*

Tengku Idzzan Nadzirah Tengku-Idris, Mun Yik Fong, Yee Ling Lau

First published: 04 October 2018
https://doi.org/10.1111/tmi.13160

Objective
To investigate the seroprevalence of *Sarcocystis* in the local communities of Pangkor and Tioman islands, Malaysia, by using antigenic recombinant surface antigens 2 and 3 from *Sarcocystis falcatula* (rSfSAG2 and rSfSAG3) as the target proteins via Western blot and ELISA assays.

Methods
*SfSAG2* and *SfSAG3* genes were isolated from *S. falcatula* and expressed in *Escherichia coli* expression system. A total of 348 serum samples [volunteers from both islands (*n* = 100), non-*Sarcocystis* parasitic infections patients (*n* = 50) and healthy donors (*n* = 100)] were collected and tested with purified SfSAGs in Western blot and ELISA assays to measure the seroprevalence of human sarcocystosis.

Results
None of the sera in this study reacted with rSfSAG2 by Western blot and ELISA. For rSfSAG3, relatively high prevalence of sarcocystosis was observed in Tioman Island (75.5%) than in Pangkor Island (34%) by Western blot. In ELISA, the different prevalence rate was observed between Tioman Island (43.8%) and Pangkor Island (37%). The prevalence rate in other parasitic infections (amoebiasis, cysticercosis, filariasis, malaria, toxocarasis and toxoplasmosis) was 30% by Western blot and 26% by ELISA. Only 8% (by Western blot) and 10% (by ELISA) of healthy donors showed reactivity towards rSfSAG3.

Conclusion
This is the first study reporting a seroprevalence of sarcocystosis in Pangkor and Tioman Islands, Malaysia. The combination of Western blot and ELISA is suitable to be used for serodiagnosis of sarcocystosis. With further evaluations, SfSAG3 can potentially be used to confirm infection, asymptomatic screening, surveillance and epidemiological studies.