

The use of *Ascaris suum* haemoglobin as diagnostic antigen for human ascariasis.

Vlaminck J.^{1*}, Geldhof P.², Hokke C.H.³, Supali T.⁴, Fischer P.U.¹ and Weil G.J.¹

¹ Div. of Inf. Diseases, Dept. of Internal Medicine, Washington University in St. Louis, USA.

² Lab. of Parasitology, Dept. of Virology, Parasitology and Immunology, Ghent University, Belgium.

³ Department of Parasitology, Leiden University Medical Center, Leiden, The Netherlands.

⁴ Department of Parasitology, Faculty of Medicine, University of Indonesia, Jakarta, Indonesia.

*Corresponding Author: jvlaminck@dom.wustl.edu

The human roundworm *Ascaris lumbricoides* infects some 800 million people in the developing world. Standard diagnostic tests for ascariasis depend on detection of parasite eggs in stool samples. This technique has some important limitations in terms of both application and interpretation. A new antibody test has recently been developed for detecting *Ascaris* infections in domestic pigs using *A. suum* hemoglobin antigen (AsHb). Since *Ascaris* worms in humans and pigs are very similar, the objective of this study was to evaluate the diagnostic value of native and recombinant AsHb for community diagnosis of human ascariasis. Initial results showed that humans living in an endemic area in Indonesia had high rates of IgG4 antibodies to AsHb. Antibody rates and titers significantly decreased in the community following two annual rounds of mass treatment with albendazole. Unfortunately, further studies showed that sera from patients with hookworm infections contain cross-reactive antibodies to AsHb. Interestingly, antibodies in *Ascaris* and hookworm infection sera do not bind to recombinant AsHb produced in *E. coli* or to AsHb after treatment with PNGaseB. This suggests that the antibodies bind to carbohydrate epitopes. This study has provided a proof of principle that antibody testing may be useful for monitoring the effects of deworming programs in communities. While antibodies to shared carbohydrate antigens may have some value, we are now searching for antigens that can provide species-specific diagnoses.