AN IMMUNOMICS APPROACH DETECTS PROMISING CANDIDATE ANTIGENS FOR ASCARIS SERODIAGNOSIS IN PIGS AND HUMANS.

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Introduction: The nematode parasite Ascaris lumbricoides infects over 800 million people and is considered to be an important neglected tropical disease pathogen. Ascariasis has a substantial impact on public health, but routine diagnosis still relies on the detection of eggs in stool. This technique has important limitations in terms of both application and interpretation and will lose merit as control programs continue to reduce parasite prevalence. Therefore, the development of a serological tool to detect exposure to Ascaris could be a game-changer in certain stages of control programs.

Aim: The goal of this project is to identify immunoreactive proteins of lung stage larvae of Ascaris and to produce them recombinantly for evaluation as a serodiagnostic antigen for ascariasis.

Methods: Antibodies from infected pigs and humans were purified from serum and bound on an agarose column. An extract of A. suum lung stage L3 was passed over the column and bound antigens were eluted and analysed by mass spectrometry. Proteins were expressed in a yeast strain and purified using HPLC. The diagnostic potential of the recombinant antigen was evaluated using serum from experimentally infected pigs or naturally infected humans and the results were compared to those obtained by analysis with two other in-house ELISA tests for Ascaris.

Results: A total of 28 and 26 antigens were specifically captured by antibodies from infected pigs and humans respectively. Only 2 of the antigens were captured by antibodies from both infected pigs and humans. One of them was a 24kDa antigen (As24) with a signal peptide, no apparent N-glycosylation sites and with high expression levels in the lung stage L3 larvae. Based on these promising features, the As24 antigen was selected for recombinant production. We have currently expressed the antigen and are in the progress of evaluating its diagnostic potential. We wish to present the results of this evaluation during our presentation.

Conclusion: The immuno-proteomics approach employed in this study resulted in the selection of an immunodiagnostic antigen with the potential to serve as the basis for a new immunodiagnostic assay for the diagnosis of Ascaris infections in humans and pigs.