**Proteomic analysis of the excretory-secretory products of the larval stages of *Ascaris suum***

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**Abstract**

*Ascaris lumbricodis* and *Ascaris suum* are widespread parasites of humans and pigs, respectively. Recent prevalence data suggested approximately 1.2 billion people are infected mainly in the tropics and subtropics. Hosts become infected by the oral ingestion of *Ascaris* eggs containing an L3 larva. After hatching in the gastrointestinal tract, the larvae penetrate predominantly the caecal wall and undergo a hepato-pulmonary migration, after which ultimately the adult females and males establish and develop in the small intestine. The proteins presented at the parasite-host interface during the different phases of tissue invasion are likely to play a critical role in the induction and development of the protective immune responses. Such proteins are mainly present in the excretory-secretory (ES) products and can be released from the cuticular surface or specialized excretory/secretory organs. The aim of this study was to identify the ES products of the different larval stages (L3-egg, L3-lung and L4) by liquid chromatography-tandem mass spectrometry. In total, 177 different proteins were detected in the larval stage ES products, 64 in the L3-egg stage, 74 in the L3-lung stage and 81 in the L4 larval stage. Most of the identified proteins were stage-specific although 6 were present in the ES material of all stages, i.e. a 14-3-3-like protein, 2 peptidyl-prolyl cis-trans isomerases and 3 serpin-like proteins. Interestingly, comparison of the L4 ES material with the other ES samples showed a higher abundance of metabolic enzymes, in particular glycosidase enzymes. This could indicate that the degradation of complex carbohydrates forms an essential part of the energy metabolism of this parasite. In conclusion, this proteomic analysis extends our knowledge of biology of *A. suum* migratory larvae and provides important information on the host-parasite interaction and the biology of this parasite.