

Immunogenic proteins in the somatic proteome of the adult cestode *Hymenolepis diminuta* – a proteomic approach

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In spite of the current progress in studies dedicated to parasitic worms we still know relatively little about the interactions of adult tapeworms with their vertebrate hosts. The available data are limited and focused mainly on the taeniid cestodes, whereas other species are rather neglected, despite non-taeniid cestodes used as model organisms for a number of experimental studies. In this respect, the most important species is *H. diminuta*, representing the most popular model in modern parasitology. Adult parasites live in the host's small intestine and produce molecules which are crucial for the complex system of host-parasite interactions. These interactions include direct contact between the parasite and host with the mature tapeworms attaching to the intestinal tissue with scolex and tegument. A host immune response to the parasite molecules ensues. We decided to find out which of the adult parasite proteins may interact with the immune system of the host and what is their most plausible role. To achieve our goal we subjected the crude protein extract from adult tapeworms to two-dimensional immunoblotting with sera collected from experimentally infected rats. We were able to select 36 protein spots which exhibited reactivity to the rat sera. These were manually excised from the gel and protein identification was carried out using LC-MS/MS. We identified 66 proteins, among others these include: enolases, HSPs, kinases, phosphatases, glycolytic enzymes and muscle proteins (actin, myosin, paramyosin). Selected proteins are engaged in key metabolic processes and are known as important parasite-host crosstalk molecules. Numerous identified proteins were reported for the first time as potential antigens in the adult cestode crude protein extract. Most of the identified proteins are engaged in metabolic and cellular processes, therefore, apart from their antigenic properties and importance in molecular intraspecific interactions, they may represent interesting targets for new therapies. Moreover, our data suggests that the immune response of the host to adult cestodes is complex and stimulated by diverse antigens, including proteins with cytoplasmic expression (e.g., actins, myosin). These results extend our knowledge concerning the complexity of the host-parasite interplay during cestodiasis and show possible pathways for future experiments.

Funded by the National Science Centre Poland (grant number: 2012/05/B/NZ6/00769).