

Immune responses induced after immunization with *Fasciola hepatica* ferritin protein (FhFtn-1) and its potential as a serodiagnostic antigen to detect chronic fascioliasis

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Fascioliasis is recognized by the World Health Organization as a major human disease with about 17 million people infected and 181 million at risk of infection worldwide. Current efforts for the control of fascioliasis need of new antigens for developing diagnostic tools and an effective vaccine to reduce the reliance on anthelmintics, particular in light of frequent reports of resistance to some frontline drugs. We recently published the first biochemical characterization of a ferritin protein (FhFtn-1) from *F. hepatica*. Here, we evaluated recombinant FhFtn-1 as antigen for serodiagnosis of human fascioliasis and its immunogenic potential in a rat model of fascioliasis. An in-house FhFtn-1-ELISA was optimized and validated using 152 sera from humans with known infection status, which included sera from healthy subjects, sera from patients with chronic fascioliasis and sera from patients with other parasitic diseases. The FhFtn-1-ELISA showed to be 96.6% sensitive and 95.7% specific demonstrating the potential of FhFtn-1 as a tool to detect fascioliasis in human populations. During the immunization protocol, FhFtn-1 was emulsified in Montanide IMS 1312 VG adjuvant and injected subcutaneously on Wistar rats. Animals that were vaccinated with PBS-IMS 1312 and then infected with 35 *F. hepatica* metacercariae served as control group. Our results demonstrated that FhFtn-1 is highly immunogenic as demonstrated by the high levels of total IgG antibodies elicited shortly after the first injection. IgG2a was more prevalent in the sera of vaccinated animals compared to IgG1 or IgG2b, suggesting that FhFtn-1 stimulates Th1-immune response which is associated to vaccine-induced protection.

Biography

Kimberly Cabán-Hernández has completed her bachelor degree in Microbiology from the University of Puerto Rico (UPR)-Mayagüez Campus and is currently finishing a Ph.D. at the UPR-Medical Sciences Campus, Puerto Rico in the Laboratory of Immunology and Molecular Parasitology. She authored and co-authored many papers presented in various conferences and have published in peer-reviewed journals. Her research involves the evaluation of new *Fasciola hepatica* antigens as serodiagnosis and/or vaccine candidates to control fascioliasis infection. After completing her doctoral studies she plans to continue training in immunology and infectious diseases.

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