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Novel expression of *Schistosoma mansoni* cathepsin L1 suggesting potential role as a diagnostic marker for human schistosomiasis

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Schistosomes utilize proteinases to accomplish several activities such as tissue penetration, tissue digestion and evasion of host immune responses. Cathepsin L which indicates that this enzyme contributes to the proteolysis of ingested hemoglobin is a cysteine proteinase of the papain superfamily detected in their gut lumen. Due to the roles played in the schistosome biology, proteolytic enzymes are considered potential targets for developing and guiding antischistosomal therapies. In the present work, the cathepsin L cDNA coding of *Schistosoma mansoni* was cloned providing high-level expression of heterologous proteins in Escherichia coli to produce recombinant schistosome cathepsin L with 597 bp. Our product had 99% similarity to a *Schistosoma mansoni* Puerto Rican preprocathepsin L (SmCL1) mRNA. The recombinant fusion protein was then analyzed by SDS-PAGE and Western blotting resulting in a molecular weight of approximately 31 kDa. The recombinant protein was expressed as inclusion bodies, purified under denaturing conditions. This recombinant protein could be recognized specifically by rabbit antiserum against Schistosoma adult worm antigen preparation (SWAP), showing that the expressed product possessed good antigenicity. The specificity and sensitivity of the purified recombinant cathepsin L against *S. mansoni* infected patients was assessed using ELISA. Sera from 97 *S. mansoni* infected patients, 30 patients infected with other helminthic infection and 30 healthy controls were collected. Anti-Cathepsin-L *S. mansoni* antibodies were detected with the sensitivity reached to 99% and specificity was 99.3 %. These results suggest that our product of *S. mansoni* cathepsin L might be considered as a suitable candidate for diagnosis of human schistosomiasis.

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AID expression in CD4+ T cells is associated with a IL-10-producing subset that increases with age

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Activation-induced cytidinedeaminase (AID) is essential for immunoglobulin gene alterations to form immune memory. In addition, AID has the genotoxicactivity that is involved in tumorigenesis even in non-B cells. To examine the feature of AID-experienced lymphocytes, a genetic system was used, in which both past and current Aicda (a gene encoding AID) expression can be detected with high sensitivity. With this system, fractions of AID-expressed (exAID) T and B cells accumulated by aging were observed. Most of the accumulated exAID B cells remained IgM positive, but many of them bore mutated Ig. The Aicda expression were also detected in a substantial fraction of CD4+ T cells that increased by aging, and can reach to almost 25% of total CD4+ T cells at the age around 18 months. The expression was rather augmented in the absence of B cells using μMT mouse, thus T-B interaction may not be critical for AID expression in T cells. Because the exAID T cells showed a unique feature that produces IFN-γ and IL-10, but few IL-4 and IL-17, raising a possibility that AID is involved in a function of particular subset of CD4+ T cells. Further, it was found that almost exAID CD4+ T cells in aged animals were PD1+ cells, also indicating exAID expression accumulation with increasing age. These results imply the involvement of AID in multiple biological processes in T and B lymphocytes development.

Biography

Hongyan Qin has completed her PhD from Fourth Military Medical University and Postdoctoral studies from Department of Immunology and Genomic Medicine in Graduate School of Medicine of Kyoto University. She is the Vice-Director of Department of Medical Genetics and Developmental Biology of Fourth Military Medical University. Until now she has published more than 20 papers in reputed international journals.

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