

Leishmania Antioxidants: Peroxidoxin 1 as a Promising Target for Vaccine Development

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Leishmania antioxidants, like peroxidoxins, represent potential vaccine candidates against leishmaniasis. We assessed the immunogenicity and protective efficacy of recombinant *Leishmaniadonovani* peroxidoxin 1-GST fusion protein (rPxn1-GST) in BALB/c mouse model. Mice were immunized with three s. c injections of rPxn1-GST with or without CPG-ODN in three-week intervals. Four weeks after the last immunization the mice were challenged with *Leishmania major* and the level of protection was evaluated as the reduction in lesion size and parasite burden. Recombinant Pxn1-GST protein with CpG demonstrated significant level of protection as compared to rPxn1-GST without adjuvant and all other control groups. The rPxn1-GST/CpG ODN regimen showed marked reduction in the parasite load and footpad swelling of BALB/c mice. Recombinant Pxn1-GST alone and GST with or without adjuvants gave similar results as controls. There was higher level of IgG2a and IFN- γ in rPxn1-GST/CpG vaccinated mice, as compared to protein alone or adjuvant alone control groups, which indicates that the protection in this group is associated with a biased Th1-type immune response. Despite the enhanced Th1 immune response in mice immunized with GST/CpG, these mice showed progression of the infection similar to other control groups. This result be speak that the partial protection seen in mice receiving rPxn1-GST/ CpG is antigen dependent.

Biography:

Dr. Nada Daifalla obtained her master degree in Immunology from the Institute of Endemic Diseases (Dr. H. Ghalib's lab), University of Khartoum, Sudan and her Ph.D in Molecular Immunology from the University of Calgary (Dr. L. Gedamu's lab). Nada has several years of expertise in the area of immunology and molecular biology focusing on infectious diseases including leishmaniasis, tuberculosis, and lyme disease. She worked in different projects including antigen discovery, diagnostic and vaccine development, biomarker identification, and stem cell research. Nada worked in research and teaching in renowned institutions including The Institute of Endemic Diseases, Sudan; Infectious Disease Research Institute, Seattle, USA; University of Calgary, Canada; The Forsyth Institute (Harvard University), Massachusetts, USA. Currently she is an Assistant Professor at Imam Abdulrahman Bin Faisal University, KSA.