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Modulation of the expression of innate immunity markers by human macrophage THP1 cells following infection with *Leishmania donovani* isolates

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Protozoa of the genus *Leishmania* cause a wide variety of pathologies ranging from self-healing skin lesions to visceral pathology. The outcome of infection depends on the species of the infecting *Leishmania* parasite. A significant role of the adaptive immune response was described for the development of clinical disease and cure. While TH2 was associated with development of clinical disease, TH1 response was associated with cure. This study aimed to determine the profile of innate immune markers using *Leishmania* infected human THP1 macrophage cell lines. The parasite isolates were collected from patients suffering from cutaneous, visceral, post kala-azar dermal and mucosal *leishmaniasis*. Human THP1 cells were infected by live promastote of *Leishmania donovani* isolates from Cutaneous (CL), Visceral (VL) and Post Kala-Azar Dermal *Leishmaniasis* (PKDL) and Mucosal *Leishmaniasis* (ML) patients. The expression of toll like receptor TL22, TL4 and TL9 and expression of IFN- γ and IL-10 cytokine was measured using Real Time PCR. The production of IL-1 β , IL-6 and TNF- α cytokines was measured using captured ELISA. A significant increase in the expression of TLR 2, TLR4 and TLR9 by *L. donovani* infected THP-1 from ML patients was detected. A higher concentration IL-6 and IL-1 β was detected in supernatants of *L. donovani* infected human macrophage cell lines from CL patients compared with VL and ML patients whereas IL-1 β concentration was higher in *L. donovani* infected human macrophage cell lines from ML patients. Our data measured a significant increase in the expression of TLR 2 and TNF- α by THP-1 cell line infected with *L. donovani* isolate from mucosal patient. *Leishmania* isolates from mucosal and PKDL patients induced significant gene expression of TLR 4 and TLR9. These results could contribute to better understanding of the dynamics of gene expression and production of co-inflammatory cytokines in host cells during leishmaniasis.

Biography

Amal Aldawi Assistant professor in Immunology Ibn Sina University. Certified Immunologist American Board Bioanalysis (ABB). She earned her master and ph.D degrees in immunology from Khartoum university institute of endemic disease . She is an expert in histocompatibility analysis and the analysis of cellular immunity to infectious diseases. she is a leader in tissue culture of leishmania parasite and invitro stimulation of peripheral blood and cytokines analysis. She works on several research projects at Bioscience Research Institute Ibn Sina University and supervised several junior scientists and postgraduate students. She has built after years of experience in research evaluation, teaching and administration in education institutions.