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Mouse Macrophage Galactose-type Lectin (mMGL) is Critical for Host Resistance against Trypanosoma cruzi Infection

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Abstarc :

The C-type lectin receptor mMGL is expressed exclusively by myeloid antigen presenting cells (APC) such as dendritic cells (DC) and macrophages (M?), and it mediates binding to glycoproteins carrying terminal galactose and ?- or ?-N-acetylgalactosamine (Gal/GalNAc) residues. Trypanosoma cruzi (T. cruzi) expresses large amounts of mucin (TcMUC)-like glycoproteins. Here, we show by lectin-blot that galactose moieties are also expressed on the surface of T. cruzi. Male mMGL knockout (-/-) and wild-type (WT) C57BL/6 mice were infected intraperitoneally with 104 T. cruzi trypomastigotes (Queretaro strain). Following T. cruzi infection, mMGL-/- mice developed higher parasitemia and higher mortality rates compared with WT mice. Although hearts from T. cruzi-infected WT mice presented few amastigote nests, mMGL-/- mice displayed higher numbers of amastigote nests. Compared with WT, M? from mMGL-/- mice had low production of nitric oxide (NO), interleukin (IL)-12 and tumor necrosis factor (TNF)-? in response to soluble T. cruzi antigens (TcAg). Interestingly, upon in vitro T. cruzi infection, mMGL-/- M? expressed lower levels of MHC-II and TLR-4 and harbored higher numbers of parasites, even when mMGL-/- M? were previously primed with IFN-? or LPS/IFN-?. These data suggest that mMGL plays an important role during T. cruzi infection, is required for optimal M? activation, and may synergize with TLR-4-induced pathways to produce TNF-?, IL-1? and NO during the early phase of infection.

Key Word :
mMGL, Trypanosoma cruzi, Proinflammatory cytokines, C-Type lectin receptor, Macrophages receptors

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