Host immunocompetence influences the activation of neutrophils when exposed to *Leishmania* spp.


1 Universidade Nova de Lisboa, Portugal  
2 Hospital de Egas Moniz, Portugal  
3 Universidade de Lisboa, Portugal  
4 Universidad Federal do Piauí, Brazil  
5 Universidade de São Paulo, Brazil

Polymorphonuclear cells (PMN) constitute the first line of defense of the innate immune system against invading pathogens, such as the *Leishmania* parasite. This parasite cause leishmaniasis reported over 98 countries and affecting both animals and human beings. Depending on the infecting species of *Leishmania* and of host immunocompetence different clinical manifestations can be originated, mainly identified as cutaneous (CL) or visceral leishmaniasis (VL). The present study aims to evaluate the activation of PMN isolated from human donors with different immune competence when exposed to VL (*L. infantum*) and CL (*L. amazonensis, L. guyanensis* and *L. shawi*) species of *Leishmania*. Activation of oxidative pathway was assessed by Griess reaction and granule exocytosis was studied using enzymatic assays directed to neutrophil elastase (NE) and cathepsin G (CatG). Release of extracellular traps (NET) by parasite-exposed PMN was examined by scanning electron microscopy. It was found that all the species of *Leishmania* investigated in the present study induced CatG exocytosis and NET release despite immunocompetence of the studied subjects. On the contrary, the induction of oxidative stress and the release of NE diverge between PMN isolated from immunocompetent and immunocompromised individuals. Taken together, these results pointing out to the possible existence of different approaches for PMN activation in association with host immunocompetence might be specifically primed by particular *Leishmania* antigens. Despite being short lifetime cells, neutrophils seem to be negatively influenced by immunosuppression, possibly impacting the effectiveness of early innate immune response against *Leishmania* spp. and consequently, influence the infection outcome.

Biography

Silva-Pedrosa R is currently pursuing Masters in Biomedical Sciences at the Instituto de Higiene e Medicina Tropical, IHMT, Universidade Nova de Lisboa, UNL, Lisbon, Portugal. In 2012, she has completed her Bachelor’s degree in Health Science by the Instituto Superior de Ciências da Saúde Egas Moniz (ISCSEM), Lisbon, Portugal. She did a three-month Traineeship program in the Instituto Zooprofilattico Sperimentaledella Sicilia, Italy and has obtained experience in human and animal leishmaniasis.

ana.pedrosa@ihmt.unl.pt  
rita_slv@hotmail.com

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