Abstract

Leishmania reside fagolysosome of macrophages immediately after their entry to host where they multiply and consequently infect other macrophages or eventually other cells. A synthesis of a reactive reactant of oxygen and nitrogen is one of the mechanisms that some mammal cells are equipped with and that also contributes to eradication of leishmania. Nitric oxide rising during a metabolic change of L-arginine under the catalysis of NO synthase is of a large importance. Beyond cytotoxic function, nitric oxide is involved in signalling pathways for a neurotransmission (nNOS) and vasorelaxation (eNOS). Not all types of macrophages have ability to produce NO (iNOS). It is a heterogeneous group differing in immunological function and also in physiology. A group of classical activated macrophages represents an effective APC capable of efficient killing of intracellular pathogens. In addition to NO, they also secrete an inflammatory cytokines, which evolve an immune reaction towards to Th1. Contrary to this, a group of alternative activated macrophages is not capable of any efficient antigen presentation and nitric oxide production but produces L-ornithine, which is a precursor of polyamines, which leishmania utilizes for its own intracellular growth. For the mouse model, status of resistance and/or susceptibility of leishmaniosis refers to a polarization towards to Th1/Th2 immune response. New resources for inhibition of nitric oxide synthesis were evolved in leishmania during the evolution. All this is enabled because of glycoproteins present on body surface of leishmania. A vector - phlebotomus also plays an important role in a virulency by leishmania. Saliva of phlebotomus modulate immune response of a host and inhibit some functions of macrophages. A phenomenon of saliva supporting survival of leishmania in a host is called as enhancing effect.