Efficacy of statins in the controle of *M. leprae* and *M. tuberculosis* infection.

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**Introduction:** Leprosy is a chronic infectious disease that affects the skin and peripheral nerves. The response to infections may be accompanied by systemic changes in lipid metabolism. *M. leprae* is able to induce lipid body biogenesis, and these corpuscles are recruited to the phagosome containing the mycobacterium. It was observed that inhibition of this recruitment significantly reduced the viability of intracellular *M. leprae*. Given these results we investigated the efficacy of drugs that inhibit cholesterol synthesis (statins) on intracellular survival of *M. leprae*, *M. tuberculosis* and *M. bovis* BCG pathogens.

**Methods:** Macrophage cultures infected with viable mycobacterium were treated with atorvastatin or sinvastatin during 72 h. Mycobacterium viability analysis was carried out by real-time PCR (*M. leprae*) or CFU counting (*M. tuberculosis* and *M. bovis*). BalbC mice were infected with *M. leprae* following Sheppard’s model and treated with atorvastatin during 6 months before bacillar count. The cytotoxicity of different treatments was checked by MTT assays and seric transaminase activity in cells and mice, respectively.

**Results:** We observed a decrease in mycobacteria viability after incubation with both statins. Atorvastatin had the highest effect against *M. leprae* and *M. tuberculosis* at 1mg/ml dose (60% and 50% of efficacy respectively), while sinvastatin showed better results against *M. Bovis* BCG (70% of efficacy). In in vivo model we observed atorvastatin efficacy of 50% against *M. leprae* in a dose of 80mg/kg/week. Both drugs showed a synergistic effect with rifampicin. The drugs do not interfere in the cellular viability or increase transaminase activity; on the other hand, they efficiently reduce cholesterol levels, in cells and animal serum.

**Conclusion:** Statins present bactericidal activity against *M. leprae* and *M. tuberculosis* in vitro and in vivo. Its association with multidrug therapy can bring benefits. Its efficacy against MDR *M. tuberculosis* and atypical mycobacterium are under investigation.

Word Keys: Leprosy, Tuberculosis, Cholesterol, Statins

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