

World Congress and Expo on

Applied Microbiology

August 18-20, 2015 Frankfurt, Germany

Activity of doxorubicin against *Leishmania tropica*

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Objective: The aim of this study was to evaluate the activity of doxorubicin (Known antitumor agent, topoisomerase II poison) against cutaneous leishmaniasis caused by *Leishmania tropica* in vitro and in vivo, in view of the developmental resistance against pentavalent antimonials.

Methods: ELISA technique and *in vitro* model of leishmania infection were used to evaluate the potency of doxorubicin against promastigotes and intracellular amastigotes, respectively. In addition, in vivo model of leishmania infection was used to evaluate the efficacy of doxorubicin in curing the cutaneous lesions in mice.

Results: The potency of doxorubicin was identified with IC₅₀ value of (4.25±0.2 µM) against *Leishmania tropica* promastigotes after in vitro incubation at 26 °C for 48 hours. Doxorubicin was identified as active against *Leishmania tropica* intracellular amastigotes in peritoneal BALB/c mice macrophages with IC50 value of (3.34±0.2 µM) after incubation at 37 °C with 5% CO₂ for 48 hours. In addition, doxorubicin was strongly effective in eradicating cutaneous lesions in the left feet of BALB/c mice previously infected by *Leishmania tropica* promastigotes. After 24 hours and 4 weeks of single peritoneal dose, the difference in diameters between infected feet and healthy feet was reduced to (0.018±0.008 mm), compared with untreated control mice (Pvalues: 2.6×10⁻⁵ and 9.8×10⁻⁸, respectively). Interferon-gamma was 287.9±23.4 pg/mL in treated serum mice after one week of single peritoneal dose (Pvalue= 9.2×10⁻⁷), compared with untreated control mice.

Conclusion: Our study demonstrates that doxorubicin may be a promising, effective and safe management of cutaneous leishmaniasis caused by *Leishmania tropica* by single dose with no relapse or unpleasant cytotoxic side effects.

Biography

Ahmad Alali is a pharmacist. He has completed his Master's degree from Damascus University in the field of microbiology, hematology and immunology. He has published an article in the *Journal of Chemical and Pharmaceutical Research*.

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