Up today, no vaccine exists against any form of leishmaniasis; not safe, effective and inexpensive drugs. Until recently, a plethora of data showed that the existing anti-leishmanial drugs have numerous disadvantages such as systemic toxicity, development of resistance, long hospitalization and high cost. Thus, identifying new, effective and safer anti-leishmanial drugs is of paramount importance. To this end, much research effort has been focused on investigating new compounds derived from low-cost sources, such as natural products, for treating leishmaniasis. Oleuropein, which derives from numerous plants, particularly from the olive tree, *Olea europaea* L. (Oleaceae), is a biophenol with many biological activities. Our studies revealed that oleuropein exhibits *in vitro* inhibitory effect in both promastigotes and amastigotes of various *Leishmania* spp. Furthermore, when tested *in vivo* in an experimental visceral leishmaniasis model of *L. donovani* infected BALB/c mice, it was capable of reducing the parasitic burden. The exact mechanism that oleuropein uses in order to abrogate parasitic multiplication *in vitro* and *in vivo* has been investigated and the mode of oleuropein-driven cell death showed that is able to promote a ROS-independent cell death in promastigotes which is documented by typical features of apoptotic-like cell death. Moreover, the ability of oleuropein to promote a Th1 type immune response in *L. donovani*-infected BALB/c mice, points towards the candidacy of this bioactive compound as an immunomodulatory agent that may complement *Leishmania* therapeutic approaches.

Biography

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