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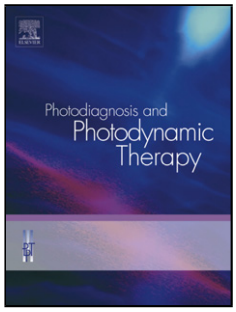


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# Evaluation of methylene blue as photosensitizer in promastigotes of *Leishmania major* and *Leishmania braziliensis*

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## Highlights

- The Methylene Blue is located in the cytosol after one hour of incubation.
- PDT with MB was decrease viability and the affect parasites morphology.
- *L. braziliensis* was more affected by the PDT than *L. major*.

## Abstract

The cutaneous leishmaniasis is caused by the protozoan of the genus *Leishmania*. It is considered by WHO as a public health issue and a neglected disease, which affects rural workers and it is also a risk to travelers in endemic areas. The conventional treatment is toxic and leads to severe side effects. The photodynamic therapy has been studied as an alternative treatment to cutaneous leishmaniasis. This study aimed to evaluate the methylene blue internalization and the impact of the PDT in the viability and morphology of *Leishmania major* and *Leishmania braziliensis* promastigote in culture medium. The fluorescence microscopy was used to determine the MB localization. To evaluate the mitochondrial activity (MTT), viability (Trypan blue test) and the morphological alterations both species were incubated with the MB in concentrations starting in 500 μg/ml, in serial dilution, until 7,8 μg/ml. The fluorescence microscopy demonstrated that the MB is internalized by both species after one hour of incubation. The MB presented low toxicity at the dark and the PDT was capable of decreasing the viability in more than 70% in the higher concentrations tested. The PDT also triggered significant morphological alterations in the *Leishmania* promastigotes. The results presented in this study are an indicative that the MB is a photosensitizer with promising potential to clinical application, besides its low cost.

**Key words:** *cutaneous leishmaniasis, treatment,* Photodynamic therapy

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