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Title: Evaluation of the activity of new 4-Quinolone compounds against hepatic and sexual forms of Plasmodium Spp

Abstract:

Malaria, a significant tropical disease, imposes a substantial global burden with high mortality and morbidity, adversely affecting socioeconomic development and the well-being of populations in endemic areas. The emergence of treatment resistance, particularly in Southeast Asia, poses a critical challenge. This study aimed to assess the potential of 4-quinolone compounds, recently evaluated for their activity against P. falciparum, as transmission blockers. Ex vivo assays involved collecting blood from P. vivax-infected patients, treating it with compounds (Lspn 182 and 685), and exposing it to female An. darlingi mosquitoes. In vivo assays involved infected female Balb/C mice with P. berghei GFP. Oral treatment was administered with the compound LSPN 182 [50mg/kg]. Mosquitos An. Stephensis made the blood gap for 30min. The exflagelation, and oocysts on day 10 were observed. Results revealed the efficacy of these compounds in inhibiting P. vivax transmission, with Lspn 182 exhibiting remarkable reductions of oocysts (~95%), sporozoites (~95%), and ookinetes (~97%) at 10 µM concentration. Notably, at lower concentrations (2 µM), Lspn 182 demonstrated 87.35% ookinete inhibition. Compound Lspn 685 also achieved 73% inhibition at 2 µM. The ookinete inhibition assay further illustrated the compounds' effectiveness, with rates exceeding 50% at 10 µM concentration. In conclusion, quinolone-derived compounds, notably Lspn 182 and 677, exhibit promising potential as transmission blockers, displaying significant activity against the ookinetes of P. vivax. In vivo assay, Lspn 182 showed ~85% exflagelation inhibition and 66% reduction transmission activity for oocysts. These findings highlight their candidacy for further exploration in combating malaria transmission.

Biography

Yasmin Annunciato, 23 years old, holds a bachelor's degree in Biology from the Universidade Paulista. She has undertaken two scientific research internships and completed a valuable stint at the Adolfo Lutz Institute, a renowned laboratory. Currently, she is pursuing a master's degree in Bioproducts and Bioprocesses at the Federal University of Sao Paulo, Brazil. Yasmin has established collaborations with prestigious institutions such as the Instituto de Higiene e Medicina Tropical in Lisbon, Portugal, and FIOCRUZ in Rondônia, Brazil. Her academic journey reflects a commitment to excellence and a passion for advancing knowledge in the field.