SEARCH FOR NEW ANTIMALARIALS FROM PLANTS USED IN TRADITIONAL MEDICINE FOR THE TREATMENT OF MALARIA AND FEVER

Ana Júlia Marques de Abreu*, Victória Miranda Machado, Ezequias Pessoa de Siqueira Filho, Isabela Penna Ceravolo

anaabreu@aluno.fiocruz.br

Instituto René Rachou, Fundação Oswaldo Cruz, Avenida Augusto de Lima 1715, Belo Horizonte, MG, 30.190-002, Brazil

Human malaria remains one of the world's leading parasitic diseases, with a reported 263 million cases globally and approximately 140,000 cases in Brazil. One of the greatest challenges in the fight against malaria is the emergence and spread of resistance of the species *Plasmodium falciparum* to currently used antimalarial drugs. Given the great biodiversity of Brazilian biomes and the fact that several drugs, including the antimalarials quinine and artemisinin, were discovered from plants, we proposed to evaluate the antiplasmodial activity of plant extracts based on an ethnopharmacological approach. For this purpose, 21 plant species from 17 botanical families were selected from a search of scientific databases (Google Scholar and PubMed). These species had previously been described as used to treat malaria and/or fever but lacked detailed scientific or academic records. The crude extracts were obtained by macerating approximately 30 g of the dry plant in ethanol (leaves, roots, aerial parts, barks, flowers, and fruits) for seven days, followed by filtration and solvent evaporation. Each crude extract was then solubilized in DMSO. The evaluation of activity against blood-stage forms of *P. falciparum* was performed using the SYBR assay at seven dilutions starting from 50 µg/mL. The activity of each plant species was evaluated by determining the concentration that inhibits 50% of the parasite's growth (IC_{50}). Extracts that showed activity (< 20 µg/mL) had their cytotoxicity evaluated in mammalian kidney cells using the neutral red uptake assay, which determined the extract concentration that was cytotoxic to 50% of the cells (CC_{50}). The selectivity index (SI) was determined by the ratio of cytotoxicity to activity, where values less than 10 were considered toxic. Of all the medicinal plants tested, eight showed activity against the parasite in the *in vitro* assay, with IC50 values ranging from 2.0 to 19.4 µg/mL and SI values ranging from 2 to 40. These results demonstrate the great potential of natural products for the discovery of new antimalarial drugs. With the isolation of the active compounds, it is expected that new drugs and therapeutic alternatives for the treatment of human malaria will emerge.

Acknowledgments: FAPEMIG, PIBIC/CNPq e Instituto René Rachou/FIOCRUZ-MG

Keywords: *malaria, ethnopharmacology,* Plasmodium falciparum*, natural products*