ÁREA TEMÁTICA: PROTOZOOLOGIA

P-170

TÍTULO: ANTIMALARIAL ACTIVITY OF NOVEL QUINOLINES

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Malaria is a disease caused by five species of the genus *Plasmodium* parasites that cause the annual deaths of thousands of people, mostly in poor countries of Africa. Very old, a variety of drugs have been used in an attempt to eradicate the disease, however the emergence of resistant strains, as well as adverse effects caused by treatment prevented such action. The quinoline make up a large part of these treatments, presenting a remarkable antimalarial activity. In this paper we evaluate the antimalarial potential of three new quinoline derivative Q1, Q2 and Q3 in*Plasmodium falciparum* cultures, strain w2, chloroquine resistant. We calculate IC_{50} of derivatives front to *Plasmodium falciparum*, the cytotoxicity (CC_{50}) front to the murine splenocytes and hemolytic potential of derivatives. Furthermore, we evaluated the potential of drugs to inhibit the hemozoin formation in parasite cultures and the presence of ultrastructural changes on parasites caused by treatment with derivatives. Q3 showed the best activity against*P. falciparum* culture with IC_{50} of 5.7 µM and selectivity ratio in relation to mammalian cells equal to 5. This derivative was also able to inhibit the formation of hemozoin crystals by parasites together with Q2. The transmission electron microscopy revealed cellular disorganization, reduced size and amount of hemozoin crystals in the digestive vacuole and cytoplasmic vacuolation and presence of structures indicating an autophagic process in cells treated with 10 µM and 20 µM of Q1. Our work shows that these new quinoline derivatives, especially Q1, have antimalarial activity and further studies are needed to better understand the properties of these derivatives, as well as the possibility of new approaches to increase their effectiveness.

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