The effect of voltage-gated K^+ inhibitors on intraerythrocytic *Plasmodiumfalciparum* parasites

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Introduction: Malaria is a treatable disease caused by *Plasmodium* parasites that results in world-wide mortality. Due to the resistance of *Plasmodium* parasites to currently known antimalarial compounds, new targets and compounds for drug therapy needs to be identified. Voltage gated K^+ channels are found in eukaryotes and other organisms and are crucial for the transport of K^+ across the membrane. These channels are highly selective for K^+ and transports K^+ across the membrane at a rapid rate following cell membrane depolarization. In *P. falciparum* parasites, two voltage- gated K^+ channels, PfK1 and PfK2 have been identified. Additionally, the disruption of the K^+ gradient by K^+ ionophores prevents asexual malaria parasite proliferation. Here, the effect of voltage-gated K^+ channels inhibitors on asexual parasite proliferation weredetermined.

Methodology: Voltage-gated K+ channel inhibitors were identified from literature and analysed using the malaria inhibitor score predictor for anti-malarial activity (Bosc et al., 2021). Compounds with a high predictive MAIP score were tested for the ability toinhibited asexual malaria parasite proliferation and cellular integrity.

Results: The K^+ channel inhibitors led to parasite death within the lower micromolar range. A morphological difference could also be seen when comparing treatedparasites with the control.

Discussion and conclusion: Voltage-gated K^+ channel inhibitors inhibit the proliferationof *P. falciparum* parasites.

Keywords: Malaria, K^+ channel, drug discovery.References:

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