New insights – drug resistance malaria

In a recent paper, scientists have discovered a drug resistance mechanism in one of the most dangerous malaria parasites affecting humans. Malaria infects approximately 247 million individuals. There has been a rise in parasite resistance to Chloroquine, a prominent antimalarial drug, in recent years.

The gene *pfaat1* encodes a protein that facilitates the transportation of amino acids across the membrane of *Plasmodium falciparum*. This gene plays a role in the parasite's resistance to chloroquine. *pfcrt*, has been the only gene identified which is responsible for chloroquine resistance. *Pfcrt* helps the malaria parasite remove the drug, rendering it ineffective.

In this study, researchers examined over 600 genomes of *P. falciparum* collected in The Gambia over a 30-year period. They discovered that mutant versions of the *pfaat1* gene.The mutations observed in *pfaat1* closely mirrored the increase in *pfcrt* mutations, highlighting the significant role of the AAT1 transporter in chloroquine resistance.

The findings of this study, combined with other genetic analyses presented, provide strong evidence of the involvement of the AAT1 transporter in chloroquine resistance in malaria parasites.

Journal article: Amambua-Ngwa, A., et al. 2023. Chloroquine

resistance evolution in Plasmodium falciparum is mediated by the putative amino acid transporter AAT1. ***Nature Microbiology***.

Summary by Stefan Botha