

Publication

A review of the frequencies of Plasmodium falciparum Kelch 13 artemisinin resistance mutations in Africa

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4646218**Author(s)** Ndwiga, L.; Kimenyi, K. M.; Wamae, K.; Osofi, V.; Akinyi, M.; Omedo, I.; Ishengoma, D. S.; Duah-Quashie, N.; Andagalu, B.; Ghansah, A.; Amambua-Ngwa, A.; Tukwasibwe, S.; Tessema, S. K.; Karema, C.; Djimde, A. A.; Dondorp, A. M.; Raman, J.; Snow, R. W.; Bejon, P.; Ochola-Oyier, L. I.**Author(s) at UniBasel** [Karema, Corine](#) ;**Year** 2021**Title** A review of the frequencies of Plasmodium falciparum Kelch 13 artemisinin resistance mutations in Africa**Journal** Int J Parasitol Drugs Drug Resist**Volume** 16**Pages / Article-Number** 155-161**Keywords** Act; Artemisinin resistance; Molecular marker; Pfk13**Mesh terms** Africa, epidemiology; Antimalarials, therapeutic use; Artemisinins, therapeutic use; Drug Resistance, genetics; Humans; Malaria, Falciparum, epidemiology; Mutation; Plasmodium falciparum, genetics; Protozoan Proteins, genetics

Artemisinin resistance (AR) emerged in South East Asia 13 years ago and the identification of the resistance conferring molecular marker, Plasmodium falciparum Kelch 13 (Pfk13), 7 years ago has provided an invaluable tool for monitoring AR in malaria endemic countries. Molecular Pfk13 surveillance revealed the resistance foci in the Greater Mekong Subregion, an independent emergence in Guyana, South America, and a low frequency of mutations in Africa. The recent identification of the R561H Pfk13 AR associated mutation in Tanzania, Uganda and in Rwanda, where it has been associated with delayed parasite clearance, should be a concern for the continent. In this review, we provide a summary of Pfk13 resistance associated propeller domain mutation frequencies across Africa from 2012 to 2020, to examine how many other countries have identified these mutations. Only four African countries reported a recent identification of the M476I, P553L, R561H, P574L, C580Y and A675V Pfk13 mutations at low frequencies and with no reports of clinical treatment failure, except for Rwanda. These mutations present a threat to malaria control across the continent, since the greatest burden of malaria remains in Africa. A rise in the frequency of these mutations and their spread would reverse the gains made in the reduction of malaria over the last 20 years, given the lack of new antimalarial treatments in the event artemisinin-based combination therapies fail. The review highlights the frequency of Pfk13 propeller domain mutations across Africa, providing an up-to-date perspective of Pfk13 mutations, and appeals for an urgent and concerted effort to monitoring antimalarial resistance markers in Africa and the efficacy of antimalarials by re-establishing sentinel surveillance systems.

URL <https://doi.org/10.1016/j.ijpddr.2021.06.001>**edoc-URL** <https://edoc.unibas.ch/89348/>**Full Text on edoc** Available;**Digital Object Identifier DOI** 10.1016/j.ijpddr.2021.06.001**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/34146993>**ISI-Number** WOS:000680659100007**Document type (ISI)** Journal Article, Review