

Plasmodium Falciparum Histidine-Rich Protein (Pfhrp2 And 3) Diversity In Western And Coastal Kenya

David Nderu, Francis Kimani, KelvinThiong'o, **Evaline Karanja***, MaureenAkinyi, Edwin Too, William Chege, Eva Nambati, Christian G. Meyer & Thirumalaisamy P.Velavan.

*Department of Biochemistry and Biotechnology

Abstract

Plasmodium falciparum histidine-rich proteins 2 (PfHRP2) based RDTs are advocated in falciparum malaria-endemic regions, particularly when quality microscopy is not available. However, diversity and any deletion in the *pfhrp2* and *pfhrp3* genes can affect the performance of PfHRP2-based RDTs. A total of 400 samples collected from uncomplicated malaria cases from Kenya were investigated for the amino acid repeat profiles in exon 2 of *pfhrp2* and *pfhrp3* genes. In addition, PfHRP2 levels were measured in 96 individuals with uncomplicated malaria. We observed a unique distribution pattern of amino acid repeats both in the PfHRP2 and PfHRP3. 228 PfHRP2 and 124 PfHRP3 different amino acid sequences were identified. Of this, 214 (94%) PfHRP2 and 81 (65%) PfHRP3 amino acid sequences occurred only once. Thirty-nine new PfHRP2 and 20 new PfHRP3 amino acid repeat types were identified. PfHRP2 levels were not correlated with parasitemia or the number of PfHRP2 repeat types. This study shows the variability of PfHRP2, PfHRP3 and PfHRP2 concentration among uncomplicated malaria cases. These findings will be useful to understand the performance of PfHRP2-based RDTs in Kenya

Scientific Reports 9(1):1709 (2019)

See more at: <https://www.nature.com/articles/s41598-018-38175-1.pdf>