

## Molecular analysis of dhfr and dhfr synthase genes of plasmodium falciparum field isolates from afgoi and balad, Southern Somalia

Abdifatah Abdullahi, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20502803&lokasi=lokal>

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### Abstrak

#### <b>ABSTRAK</b>

This study aimed to investigate the prevalence of the pfdhps and pfdhfr polymorphisms in southern Somalia. The genetic polymorphisms of both genes were analyzed by nested PCR-RFLP. A total of 150 samples were collected; of these, 101 were shown to be positive for Plasmodium (96 *P. falciparum* and 5 *P. vivax*) by nested PCR, the remaining 49 were PCR negative. Of the 96 Plasmodium falciparum isolates, 88 were successfully amplified for pfdhps and pfdhfr polymorphisms. The mutations occurring in the pyrimethamine resistance gene (pfdhfr) at codons 51, 59 and 108 were 59 (67.0%), 51 (58.0%) and 83 (94.3%) isolates, respectively. Sulfadoxine resistance-associated mutations in the pfdhps gene at codons 437, 540 and 581 were found in 41 (46.6%), 43 (48.9%) and 13 (14.8%) samples, respectively. The analysis of pfdhfr and pfdhps combination revealed that 27 (30.7%) isolates harbor the quintuple mutations (I51 R59 N108 - G437 E540 A581 and I51 R59 N108 - G437K540G581). The prevalence of single mutation, triple mutations, quadruple mutations and double mutations haplotypes were 19.3%, 18.2%, 15.9% and 12.5%, respectively. Additionally, sextuple mutations were observed at 2 isolates (2.3%). This study shows that the pfdhfr/pfdhps mutant alleles have moderately declined compared to a previous study, but still remain high.