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Antimalarial drug sensitivity and polymorphisms in gametocyte gene-*Pfg377* in *Plasmodium falciparum* field isolates from Mewat, India

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The malaria infection is the interplay of several complex factors, among which drug resistance and gametocyte biology are the crucial ones. The purpose of this study was to assess the current drug sensitivity profile in the field isolates and type the *Pfg377* genes. *In vitro* drug sensitivity assay was used to assess the susceptibility of *P. falciparum* field isolates collected from Mewat (Haryana), located in Northern region of India to four anti-malarial drugs. The inhibitory concentrations (IC₅₀) for the four drugs, viz. chloroquine (CQ), artesunate (AS), sulfadoxine (SD) and pyrimethamine (PYR) were in the range of 10.11–113.2 nM, 2.26–4.08 nM, 13.31–43.91 nM and 0.76–4.91 nM, respectively in the evaluated 25 field isolates. The *Pfg377* allele typing in the 26 field isolates revealed different types of haplotypes (A, B, C and D) in them. The types varied among themselves by the size and number of repeats and deletions. We also compared the allelic types of the *Pfg377* gene in the cryopreserved and adapted isolates of *P. falciparum* to determine the parasite lines in them. The allele types or presence of different clones in the same sample could not be correlated significantly with resistance to any of the four drugs tested in the study. Our study revealed different drug sensitivity

profiles of field isolates from Mewat region and by allele typing of *Pfg377* gene, it was found that different haplotypes of field isolates were circulating in parasite population. The *Pfg377* allele typing is suitable for detecting carriers of low number of gametocytes which play a critical role in malaria transmission. Active surveillance and continued monitoring of the artemisinin-based combination therapy (ACT) is required for identification of emerging artesunate resistance in the country for malaria control programmes.

Biography

Vineeta Singh works as a full time Scientist at the National Institute of Malaria Research, Delhi, India. She has a PhD in Biotechnology from BITS, Pilani. Her job profile is diverse ranging from research in the field of Parasite Biology to mentoring PhD students. She has more than 30 research articles, review papers and chapters in international journals to her credit. She is also a Principal Investigator in various research projects. Studies related to the biology and pathogenicity of *Plasmodium falciparum* and *P. vivax* are the major research areas of her laboratory. Her long term aim is to achieve more insight about the malaria pathogenesis which seems to be changing rapidly.

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