

## ABSTRACT

The diversity and complexity of *Plasmodium falciparum* parasite present a major problem for understanding of infection pathology, the acquisition of immunity and for vaccine development. The most popular genetic marker for assessing *Plasmodium falciparum* polymorphism are the genes coding for the merozoite surface proteins i.e MSP1 and MSP2. These MSP's, have also emerged as a major asexual blood stage malaria vaccine candidate molecules because antibodies to this proteins contribute to the ability to block merozoite invasion of RBCs. During the process of merozoite invasion of RBCs, MSP1 is processed into two proteolytic steps such that only the carboxy terminal 19kDa tail, MSP1<sub>19</sub> is carried into the new RBC. MSP1<sub>19</sub> and MSP1<sub>42</sub> fragments represent the most promising region of the molecule. In this study genetic composition of the parasite populations from a malaria endemic village of Assam was analyzed for polymorphism of MSPs by employing PCR technique. A large proportion of the sample harbored mixed infection. All the three alleles of MSP1 were seen at equal frequency. Total allelic frequency of 39 was observed for the alleles of MSP1 gene indicating multiplicity of infection. The clone multiplicity for MSP1 gene was found to be 1.95. Among the two alleles of MSP2, allelic frequency was higher for IC1 than for FC27. A total of allelic frequency of 25 was observed for the alleles of MSP2 gene indicating clone multiplicity to be 1.25. 50% of the total number of genotypes were seen in the allelic families K1 and RO33 indicating predominance of alleles of size 200-300bp of RO33 and K1. Least frequency was seen in MAD20 and amplicons tended to be localized in the size 400-550bp. MSP2 gene was found to be more diverse than the MSP1 gene. The results indicate a high rate of transmission of the parasite or there is super inoculation of the parasite.

Antibody response of the host to MSP1<sub>19</sub> antigen was also studied. We could find no association between antibody concentration and protection from the disease.