

## Inhibitory effects on parasite cytoadherence by sera from *Plasmodium falciparum* infected Sri Lankan patients

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Cytoadherence process of *Plasmodium falciparum* is a major contributory factor in triggering immunopathogenesis in severe malaria. Therefore, the antibody differences of sera from *P. falciparum* infected Sri Lankan patients in inhibiting the cytoadherence process with respect to CD36 or ICAM -1 human endothelial receptors (to which parasites cytoadhere) were studied. Laboratory adapted 3D7A *P. falciparum* line and CD36 and ICAM-1 expressing transfected Chinese Hamster Ovary (CHO) cell line were used in these experiments.

The results showed that cytoadherence inhibitory effects of tested sera on both CD36 and ICAM-1 binding of parasites, are not significantly different between the endemic (E, n=23) and non-endemic (NE, n=24) groups of Sri Lankan patients. This indicates the equally potent inductions of natural antibodies in both E and NE patients to inhibit the cytoadherence process in general. Further, the inhibitory effects on the adherence of parasites to both CD36 and ICAM -1 by sera specifically from uncomplicated (UC, n=33) patients were found to be significantly higher ( $p < 0.001$ , t-test and  $p < 0.001$ , Mann-Whitney U test) compared to sera from severe and complicated (SC, n=14) patients. This less potent cytoadherent inhibitory capabilities of SC sera would have thus determined the SC status of these patients compared to the UC patients. This may also be a result of preventive mechanisms (induced possibly by parasites) operating against the development of such anti-cytoadherent antibodies in SC patients.

Moreover, as specifically observed in the endemic patient group, sera of SC nature had lower degree of inhibition on CD36 (23%) and ICAM-1 (20%) binding of parasites, whereas the sera of UC group showed more ability in inhibiting CD36 (50%) and ICAM-1 (58%) binding of parasites. This reflects the fact that inhibitory effects on CD36 and ICAM-1 binding of parasites may be effective in regulating the disease outcome towards the UC status. The results of this study indicate the presence of naturally occurring antibodies with varying capabilities in inhibiting the parasite cytoadherence process and this would be considered in designing future strategies to treat/control severe *P. falciparum* malaria.

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