

Thesis Title            Interaction of Malaria -Infected Erythrocyte with  
                                 Monocyte : A Possible Enhacing Factor in  
                                 Thalassemic /Hemoglobinopathic Erythrocytes.

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#### ABSTRACT

There is a hypothesis that some hereditary abnormalities of red blood cells confer resistance against malaria. Several possible mechanisms had been proposed from many *in vitro* studies. Enhanced erythrophagocytosis of *P.falciparum* infected red cells (IRBC) from thalassemia had previously been demonstrated. This study was designed to determine the amount of surface IgG and the susceptibility of thalassemic infected red cells to phagocytosis by monocytes. The amount of surface IgG was semi-quantitatively estimated by FACs analysis. The susceptibility of parasitized cells to monocytes was determined by radioactive assay using [<sup>3</sup>H] hypoxanthine as a tracer. In order to inhibit phagocytosis, the cytochalasin-B treated monocytes were used, and binding of infected red cells to monocyte was measured. Thalassemic /

hemoglobinopathic infected red cells had higher percent of binding/phagocytosis than normal red cell. The amount and percent increase of surface IgG on thalassemic IRBC were higher than normal. Only  $\alpha$ -thalassemia (Hb H disease,  $\alpha$ -thal 1 trait and Hb CS/CS) showed significant difference in phagocytic assay and in the amount of surface IgG as compared to normal. No significant difference was shown in  $\beta$ -thalassemia. The surface IgG was presumably naturally occurring antibodies. It is suggested that the expression of surface neoantigen in  $\alpha$ - and  $\beta$ -thalassemia was modified that allowed greater binding of antibodies to the parasitized erythrocyte. Excessive thalassemic erythrophagocytosis may be promoted by the increased amount of surface IgG. A positive correlation between the surface IgG and susceptibility to phagocytosis was shown. The correlation coefficients are 0.67 and 0.48 in normal and  $\alpha$ -thalassemia respectively.