Plasmodium Falciparum Infection Rates in Normal and Enzyme–Deficient Erythrocytes of Glucose–6–Phosphate Dehydrogenase Deficient Heterozygotes

Principal Investigator: Walter W. Noll, MAJ, MC

Assistant Investigators: Matthew Leatherwood, SFC
Prachar Pooyindee

OBJECTIVE: P. falciparum infection rates in normal and enzyme–deficient erythrocytes of Thai women, heterozygous for glucose–6–phosphate dehydrogenase (G–6–PD) deficiency, will be determined.

DESCRIPTION: Women, heterozgous for G–6–PD deficiency (an X–chromosome–linked trait), are mosaics: approximately half of their red blood cells are normal, the other half are G–6–PD deficient. The two cell populations can be distinguished histochemically by the methemoglobin elution method (Gall et al. 1965). This technique will be applied to blood from Thai women who have malaria and are heterozygous for G–6–PD deficiency. Infection rates in both normal and enzyme–deficient red blood cells will be determined and compared. Hematocrit, reticulocyte count, red blood cell morphology, hemoglobin type, and G–6–PD activity (spectrophotometric assay) will also be determined.

PROGRESS: The study is still in a preliminary stage. Attention has been directed towards perfecting the methemoglobin elution technique and adapting it to the use of small volumes of capillary blood,

SUMMARY: Investigation of P. falciparum infection rates in normal and enzyme–deficient erythrocytes of Thai women, heterozygous for G–6–PD deficiency, is in a preliminary stage.

REFERENCES

1. Gall, J.C., et al.: Am. J. Human Genetics 17, 359 (1965)