GLUTATHIONE S-TRANSFERASE T1 NULL GENOTYPE – A PROTECTIVE FACTOR IN UNCOMPLICATED MALARIA?

Cavaco I[1], Martensson A[2], Bhattarai A[2], Ribeiro V[1], Björkman A[2], Gil JP[1, 2]

[1] Center of Molecular and Structural Biomedicine/IBB, Universidade do Algarve, Gambelas, Portugal
[2] Malaria Research Laboratory, Unit of Infectious Diseases, Department of Medicine, Karolinska University Hospital, Karolinska Institute, Stockholm, Sweden; isacavaco@gmail.com

Background *Oxidative stress plays an important role in malaria pathology. The oxidative stress inside the erythrocyte is determinant to the progression of the disease and so are the enzymes related to the antioxidant system. In this context, we decided to study known polymorphisms in Glutathione S-transferase (GST) as these enzymes are part of the cell defence mechanism against reactive oxygen metabolites. In particular, we have concentrated on GSTT1 because it is highly expressed in erythrocytes, so the presence of the GSTT1 isoform would protect the parasite against oxidative stress during the erythrocytic stage. As a control, we also analysed GSTM1 in the same group of patients, since it is not expressed in erythrocytes.*

Results *In this study we analysed GSTM1 and GSTT1 gene deletions in Zanzibar islands. The analysis was performed in a group of patients with uncomplicated malaria (n = 1515) and in a control group of patients without P. falciparum (n = 370). The results show that GSTT1 null genotype is present in a significantly higher frequency (45.4 %) in patients without malaria when compared with malaria patients (21.5 %) (OR = 0.328 (0.259–0.417)). For GSTM1 we didn't observe significant differences between the two groups (37 % vs 36.5 % – OR = 0.978 (0.773–1.24)).*

Conclusion *The results obtained suggest that GSTT1 may be an important factor in malaria pathology since the lacking of the GSTT1 gene revealed to be a protective factor in uncomplicated malaria.*