CYP2D6 and IL-6 c-174G variants in schistosomiasis haematobia

AIM
To study the polymorphic variants in CYP2D6 and the C-174G promoter polymorphism of the IL-6 gene on S. haematobium infected patients from an endemic area of Guinea Bissau.

BACKGROUND
• Our group has shown that schistosome egg associated catechol estrogens induce tumor-like phenotypes in urothelial cells. These estrogen metabolites might also be the cause of schistosomiasis associated infertility (Botelho et al, Trends in Parasitol, 2015).
• The cytochrome P450 (CYP) genes are oxygenases involved in estrogen biosynthesis and metabolism, generation of DNA damaging procarcinogens, and response to anti-estrogen therapies (Blackburn et al, Cancer Causes and Control, 2015).
• IL6 Interleukin-6 (IL-6) is a pleiotropic cytokine expressed in many tissues. These cytokine is largely expressed in female urogenital tract as well as reproduction organs. Very high or very low levels of IL-6 are associated with estrogen metabolism imbalance (Prins et al, J Reprod Immunol, 2012).

METHODOLOGICAL STRATEGY
1. 42 infected patients were targeted in this study.
2. DNA was extracted from urine sediments
3. LightMix Kit for the detection of CYP 2D6 alleles *3, *4 and *5/*5 and LightMix Kit for the detection of IL 6 G-174C were used with LightCycler 2.0 Instrument.

RESULTS
1. We found that 25% of schistosomiasis haematobia infected patients are carriers of the inactivated allele CYP2D6*5 which is characterized by a deletion of the entire CYP2D6 gene. The frequency of this allele in a healthy population is 5% (Gaedigk et al, 1991).
2. In our study 6.25% of patients infected with S. haematobium have the IL6 -174C mutant where this variant is associated with lower IL6 secretion. The frequency of this variant in a healthy population is 0.4% (Fishman et al, J Clin Invest, 1998).

CONCLUSIONS
• 1. This survey provides for the first time data on the frequency of inactivating alleles of CYP2D6 and IL6 G-174C polymorphisms in S. haematobium infected patients.
• 2. Allele CYP2D6*5 and IL6 -174C variant are associated with schistosomiasis haematobia infection and could explain schistosomiasis associated cancer and infertility.