

Could Estradiol be used as a biomarker of infection in *Schistosoma haematobium* infected patients?

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AIM

To investigate the role of estradiol (E2) as a biomarker of infection in *S. haematobium* patients.

BACKGROUND

- Schistosomiasis haematobia is a known risk factor for cancer leading to squamous cell carcinoma of the urinary bladder (SCC).
- Schistosome eggs produce catechol-estrogens (Fig. 1). These estrogenic molecules are metabolized to active quinones that cause alterations in DNA (leading in other contexts to breast or thyroid cancer).
- Our group has shown that schistosome egg associated catechol estrogens induce tumor-like phenotypes in urothelial cells, originated from parasite estrogen-host cell chromosomal DNA adducts and mutations.
- Also we have demonstrated that these molecules are detected as Estradiol (Fig. 2) in sera of infected patients.

METHODOLOGICAL STRATEGY

1. Estradiol was tested by Electrochemoluminescence (ECLIA) in the urine of a cohort of infected patients from Guinea Bissau. We used not infected individuals from the same endemic area as controls.

RESULTS

We found a significant decrease in the levels of Estradiol in the urines of infected females and a significant increase in the levels of Estradiol in the urines of infected males in comparison to not infected persons.

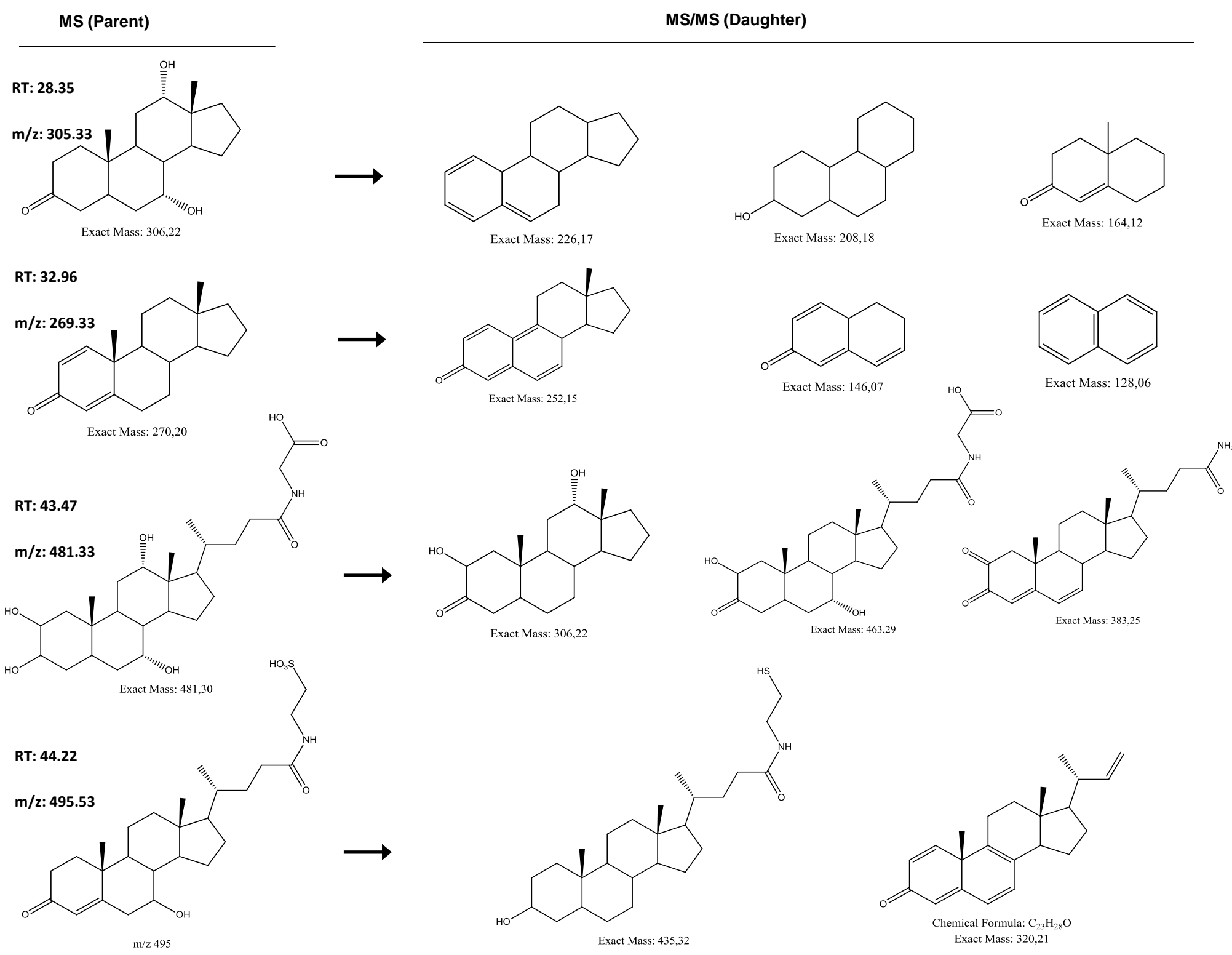


Fig. 1: Schistosome catechol-estrogens.

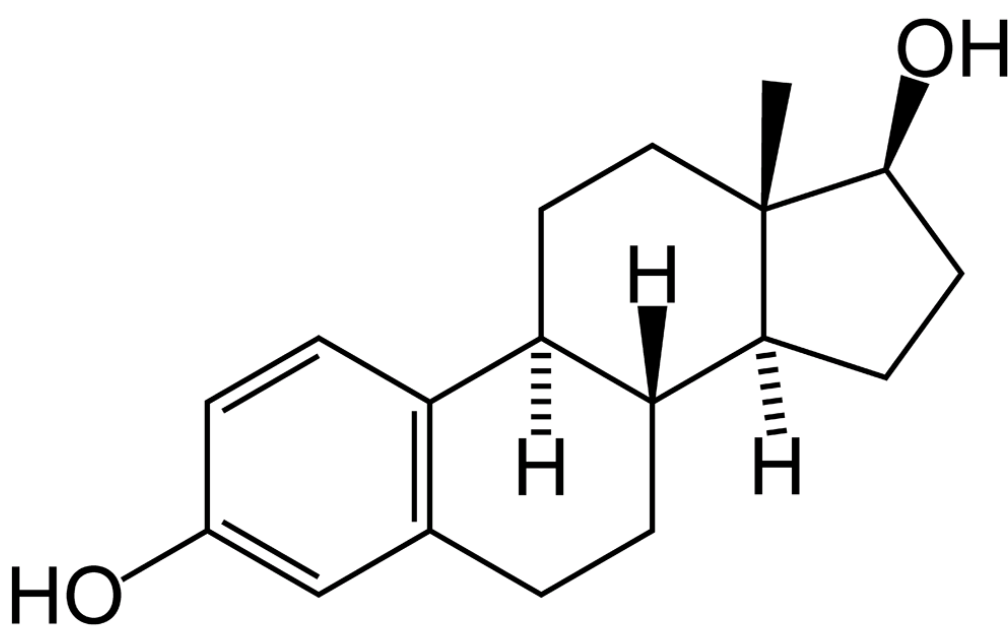
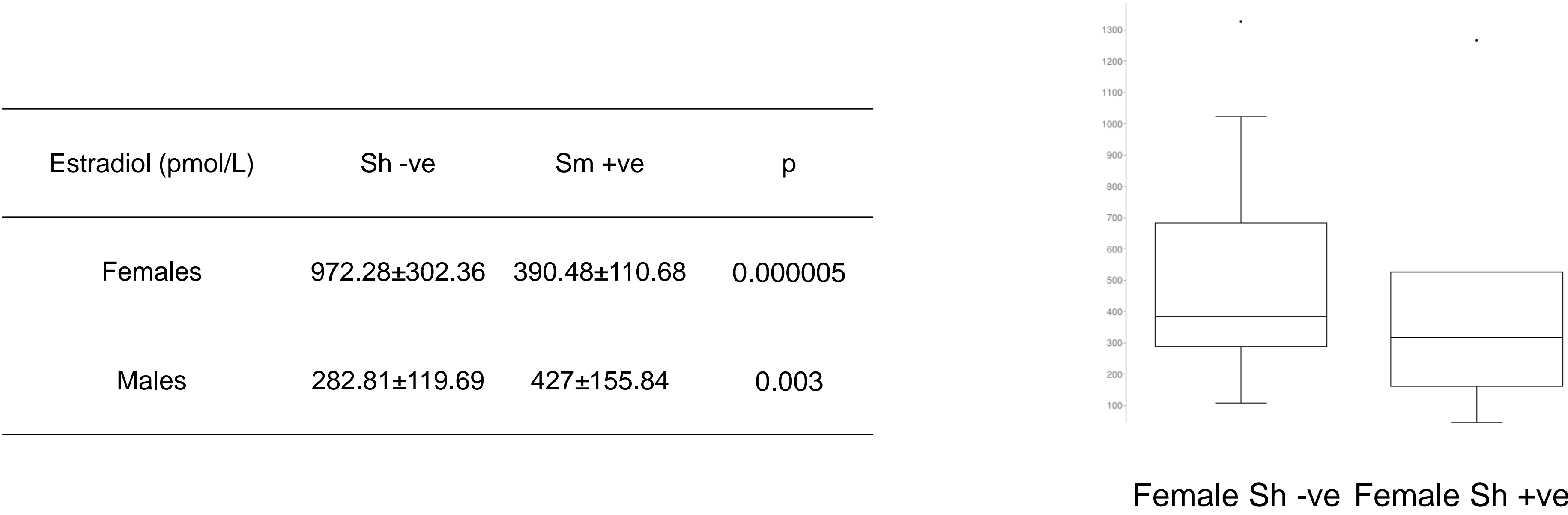
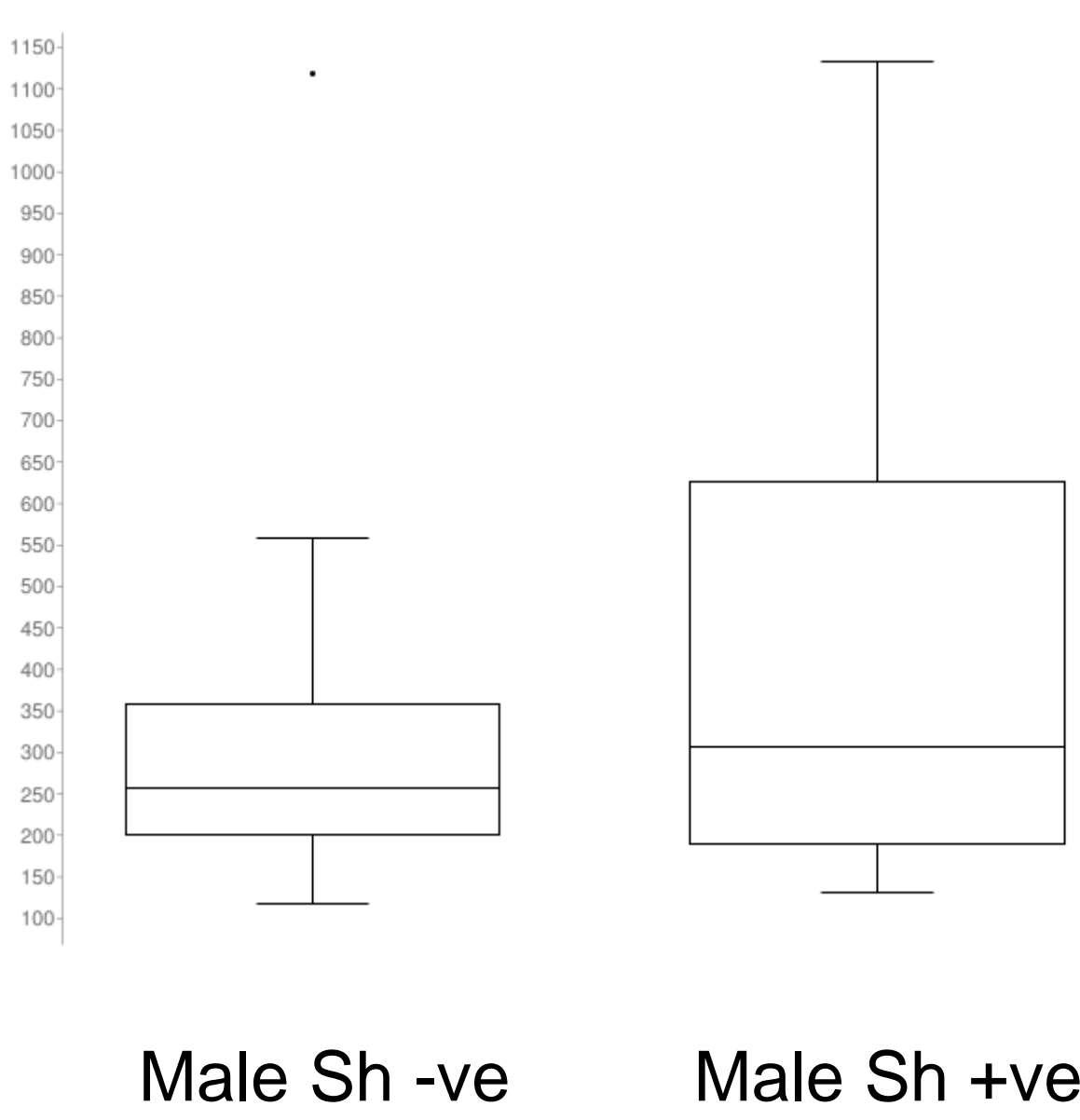


Fig. 2: Estradiol.

Estradiol urine levels among males and females negative (Sh -ve) and positive (Sh +ve) for *S. haematobium*.



Estradiol (pmol/L)	Sh -ve	Sm +ve	p
Females	972.28±302.36	390.48±110.68	0.000005
Males	282.81±119.69	427±155.84	0.003



CONCLUSIONS

- E2 can be used as a biomarker of infection with *S. haematobium*.
- Schistosome eggs associated catechol estrogens are detected by Mass Spectrometry. This method is very expensive and very time consuming specially when considering schistosomiasis a disease affecting the poorest people living in the poorest countries of the world.
- We now propose the use of a test very feasible and very low cost used in every clinical pathology laboratories: Urine Estradiol