Estrogenic activity of ground water samples in São Paulo State, Brazil

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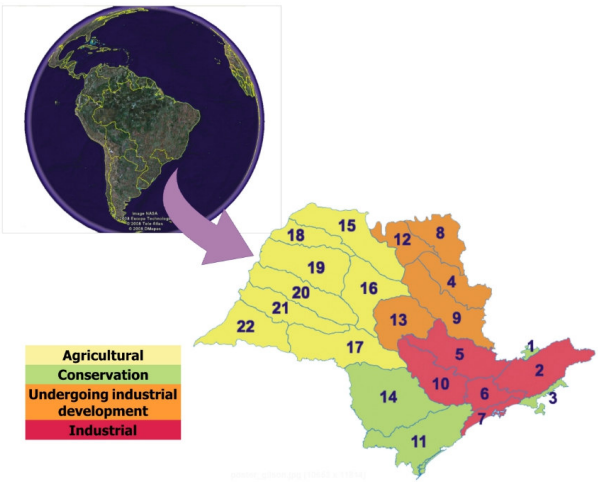
INTRODUCTION

Some environmental contaminants and many other are known as endocrine disrupting chemicals (EDC). They may interfere with the body's endocrine system and produce adverse effects in humans, aquatic life and wildlife. Some compounds such as dioxin and dioxin-like, PCB, pesticides, some plasticizers as bisphenol A (BPA) and phthalates, polybrominated biphenyls (PBB) and some substances found in personal care products are spread in the environment and may be labeled as EDC. The goal of this study was to evaluate the potential for endocrine disruption of water samples of 31 groundwater sites used as a source of drinking water in São Paulo State, Brazil, using a new bioluminescent yeast assay (BLYES).



MATERIALS AND METHODS

Groundwater samples were collected twice a year (during its highest and lowest levels). Samples were solid-phase extracted using HLB cartridges eluted with methanol.
Estrogenic activity was assessed using the BLYES (Bioluminescent Yeast Estrogen Screen) assay, performed according to Sanseverino *et al.*, 2005. Briefly the assay is based in the exposure of yeast (*Saccharomyces cerevisiae*) that harbor the human estrogen receptor along with bacterial bioluminescence genes.
Positive and negative controls were included for quality assurance.

RESULTS

Sites	Fall	Spring
Adamantina	<0,10 ng E2 equivalents/L	<0,10 ng E2 equivalents/L
Analândia		
Barão de Antonina		
Barretos (Chácara do Brejo)		
Barretos (poço de Ibitu)		
Bilac		
Bocaína		
Brotas		
Cajati		
Descalvado		
Eldorado		
Floreal		
Gália		
Guaimbé		
Indiana		
Luiziânia		
Macedônia		
Marília		
Muritinga do Sul (Boa Vista)		
Muritinga do Sul (P5)		
Nova Granada		
Nuporanga		
Palmares Paulista		
Piedade		
Presidente Prudente		
Ribeirão Bonito		
São Pedro do Turvo		
Salmourão		
Sta. Maria da Serra		
Sta. Rita Passa Quatro		
Vista Alegre do Alto		

CONCLUSIONS

These results indicate that under BLYES assay conditions the assessed sites show no presence of EDC capable of activating the human estrogen receptor.

For the first time in Brazil BLYES strains were used in a monitoring program. Assessment of the sites will proceed up to 2013.

Reference:
Sanseverino et. al. Use of *Saccharomyces cerevisiae* BLYES expressing bacterial bioluminescence for rapid, sensitive detection of estrogenic compounds. *Appl. Environ. Microbiol.*, 71, 4455-4460, 2005.