

### TH230 Adaptation of bioluminescent yeast strains for measuring the multiple hormonal and the cytotoxic activities of four UV filters

A. Balázs, Environmental Safety and Ecotoxicology; B. Kriszt, I. Orosz, C. Krifaton, Szent István University / Department of Environmental Safety and Ecotoxicology. Organic UV filters are used in personal care products and technical materials to protect skin from cancer or materials from deterioration caused by UV radiation. However, UV filters were detected in different environmental matrices and even in human milk. Since UV filters have different hormonal activities *in vitro*, so it is important to develop sensitive biological assays appropriate for detecting the hormonal effect of the UV filters. The aim of this work was to determine the estrogenic, androgenic and cytotoxic activities of 4 selected UV filters and adapt yeast bioreporters to measure the antiestrogenic and antiandrogenic activities. In order to detect hormonal activities and cytotoxicity of the UV filters bioluminescent yeast strains of *Saccharomyces cerevisiae* were applied. The BLYES/BLYAS strains serve to measure estrogenic/androgenic effects whereas BLYR strain to detect the cytotoxicity. The antiestrogenic/antiandrogenic activities could be measured indirectly by adding to each well 17 $\beta$ -estradiol or 5 $\alpha$ -dihydrotestosterone in concentration corresponds with EC<sub>50</sub> so the decreasing of bioluminescence could be followed up. For determining the dose-response curves of the UV filters serial dilutions were made in 3 parallels and the effective concentrations were calculated. According to the dose-response curves all UV filters can be characterized by antiandrogenic activity whereas none of the UV filters had androgenic potential. Benzophenone-3 (BP-3) and 4-methylbenzylidene camphor showed submaximal dose-response curve in the estrogen assay, however ethylhexyl methoxycinnamate and octocrylene were not estrogenic. Antiestrogen activity could be observed at 3 UV filters. Only BP-3 was cytotoxic to the yeasts in the applied concentration interval. This project was supported by the Research Centre of Excellence - 8526-5/2014/TUDPOL and the KTIA-AIK-12-1-2013-0017 project. Csilla Krifaton was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences. We thank for the BLYES, BLYAS and BLYR test organisms (The University of Tennessee, Knoxville, Tennessee).