P08-56
Lindane toxicity: can glutathione reductase and glucose-6P-dehydrogenase of *Saccharomyces cerevisiae* UE-ME3 provide sufficient protection against cytoplasmic damages?

T. Pita[1], I. Alves-Pereira[2] and **R. Ferreira**[2]
[1]Departamento de Química, Escola de Ciências e Tecnologia, Universidade de Évora, Évora, Portugal, [2]Departamento de Química, Escola de Ciências e Tecnologia, Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM-CTA), Universidade de Évora, Évora, Portugal

Lindane is an organochlorine persistent insecticide, lipophilic, chemically and biochemically stable, detected in the atmosphere, groundwater, sediments and soil. The literature describes this compound as toxic and able to affect animal reproduction and development. The aim of this study was to evaluate the effects of lindane in the wild-type *S. cerevisiae* UE-ME$_3$ of Alentejo, Portugal, a unicellular eukaryotic organism, described as resistant to the presence of pesticides or metals. Cells at mid-exponential phase were inoculated in YEPD medium with 2% (w/v) glucose and incubated during 72 hour in a water bath with orbital shaking, at 28°C, in the absence or in presence of 5 and 50 μM lindane. Samples from each treatment were used to obtain growth curves and to prepare post-12 000 ***g*** supernatant, used for determination of glutathione and MDA content by fluorimetry as well as GR and G6PD activities by spectrophotometry. The exposure to lindane caused a shift in growth profile after 24 hour of culture, occurring a decrease of cell growth in the final of exponential phase and at stationary phase, indicators of growth disturbance caused by this xenobiotic. Cells grown in presence of lindane showed an increase of G6PD and GR activities proportional to the organochlorine level in the media ($r = 0.972$ and $r = 0.988$, respectively). This response seems explain, in part, the increase in glutathione reducing power detected in post-12 000 ***g*** supernatant of 50 μM lindane, as well as the absence of significant changes in cytoplasmic MDA level. The increase in the G6PD and GR activities may also be correlated with the excretion of insecticide to the vacuole or with the transference of reducing equivalents which assist to anabolic pathways involved in the maintenance of cell proliferation. Despite the harmful effects caused by lindane, the reducing power transferred by G6PD and GR enzymes appear to be sufficient to minimize cell damages in the cytoplasm of *S. cerevisiae* UE-ME$_3$. The cell growth disruption can eventualy results from events at peroxisome and/or mitochondria.