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Isoproturon induces *Saccharomyces cerevisiae* UE-ME3 proliferation in glucose starvation conditions

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Isoproturon (IPU), a herbicide used in winter crops, often persists in soils and aquifers at levels considered toxic by European legislation. Whereas it may be involved in triggering of serious illnesses, it's urgent to find microorganisms that could contribute to its elimination. The main purpose of this study was to evaluate the effect of IPU on the antioxidant response of the wine-wild *Saccharomyces cerevisiae* UE-ME3 from Alentejo, Portugal, that present great resistance to vanadium and adverse conditions of wine maker. Cells at mid-exponential phase were inoculated in 2% glucose YEPD or 0% glucose YEP media with or without 100 μ M IPU incubated at 28 °C, 72 h. The culture were used to obtain growth curves (DO; cfu), dry weight and to prepare post-12,000 g supernatant for determination of protein and antioxidant power (DPPH), malonaldehyde (MDA), glutathione (GSH) and glutathione disulfide (GSSG) levels by fluorescence and spectrophotometry. The results show that yeast grown in presence of IPU exhibits a similar growth profile of the cells grown in glucose starvation conditions. However, the number of viable cells is greater whenever yeast cells were grown in the presence of IPU, either in the presence or absence of glucose, a fact that reflects higher cell proliferation conditioned by IPU. The glucose starvation has also caused a decrease of post-12,000 g supernatant protein content and the capacity to scavenge free radicals estimated by DPPH, showing likewise an increase of supernatant glutathione and pellet protein content, which seems be essentials for survival to glucose deprivation. The differences in cfu, protein, GSH, GSSG and MDA contents and antioxidant power (DPPH; GSH/GSSG) of UE-ME3 grown in YEPD and YEP were attenuated by the presence of IPU, which may indicate that the presence of this phenylurea has decrease oxidative damages induced by glucose starvation. So we can presume that IPU may have been metabolized as a carbon source to ensure the survival of this strain.

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