## Antioxidant response to titanium dioxide nanoparticles by *Saccharomyces cerevisiae* grown in different carbon sources and heat-shock conditions

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The physicochemical properties that make nanomaterials unique, also equip them with potential for affect environment adversely, causing oxidative injuries in the living beings. However, organisms also had to develop antioxidant defences to protect their cells from reactive oxygen species (ROS). Failure in the cell antioxidant defences, due to the contact with xenobiotic, results in stress causing oxidatives damages leading to loss of cell viability. Yeasts can contribute to understand the toxicity of titanium dioxide nanoparticles (TiO2-NP), because its cell structure and functional organization, share similarities with mammalians. Since the response of yeast to NPs can be influenced by temperature and available carbon source, the aim of this study was to evaluate the antioxidant response of *Saccharomyces cerevisiae*, grown in presence of glycerol with addition of 2% glucose and 5 μg/ml$TiO_2$-NP, in heat-shock conditions. $TiO_2$-NP (size <100 nm) stock suspensions were prepared by sonication. Bioassays were performed in YEPG medium (1% yeast extract, 2% peptone, 3% glycerol). Culture flasks were inoculated with wild-type *Saccharomyces cerevisiae* UE-$ME_3$ and shaken 150 rpm, at 28°C. At exponential phase was added glucose and $TiO_2$-NP stock solution (YEPGD-NP) to obtain a final concentration of 2% and 5 μg/ml. Yeasts grown 200 min at 28 or 40°C (heat-shock, HS). Flasks lacking glucose (YEPG) or NPs served as controls. Biomass was quantified by dry weight. Post-12000 *g* supernatants were used for determination of GSH, GSSG and ROS contents by fluorescence as well as glutathione reductase (GR), glutathione peroxidase (GPx), glucose-6-phosphate dehydrogenase (G6PD), catalase (CTT1) activity by spectrophotometry. Post-12000 *g* pellets were used for determination of catalase (CTA1) activity. Statistical analysis by ANOVA I and Duncan test. The results showed that biomass, ROS level and GR activity in the cells grown in YEPGD were higher than those detected in cells grown in YEPG. Furthermore, cells grown in YEPGD exhibited lower levels of GSH and MDA and CTT1activity comparatively with yeasts grown in YEPG. *S. cerevisiae* grown in YEPGD-NP in HS showed growth inhibition to levels near of cells which used glycerol as carbon source. Additionally, it was also detected a decrease in the GSH contents, GSH/GSSG ratio, GPx, CTT1 and CTA1 activities as well as an increase in ROS content and GR activity, relatively to the cells growing only in glycerol. It was also observed an increase in ROS level and GR activity in the yeast grown in YEPGD-NP, relatively to *S. cerevisiae* grown in YEPGD. $TiO_2$-NP in HS caused oxidative stress in yeast grown in presence of glycerol and glucose, decreasing GSH/GSSG ratio, increasing ROS content and GR activity.

**Keywords:** metal nanoparticles, stress oxidative, yeast

## Assessment of urinary epidermal growth factor level in patients with chronic renal failure

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**Purpose:** Epidermal growth factor (EGF) is a peptide expressed in various tissues. It has mitogenic effect on epithelial and mesothelial cells. EGF can be measured in all body fluids. It has been suggested by previous studies that a large part of the urinary EGF is originated from kidney, a small amount of EGF is derived from other organs. If urinary EGF has renal origin, EGF concentration in the urine may reflect the number of functional nephrons and it may be a good marker for assessment of renal function. In the present study, determination of the urinary EGF concentration was purposed in diabetic and non-diabetic patients with chronic renal failure.
**Method:** Urinary EGF levels were measured in 24-hour urine samples obtained from patients with chronic renal failure (n = 57) and age matched controls (n = 20). EGF measurements were performed with commercial ELISA kit and EGF concentration is calculated as ng/mg creatinine. Statistical analysis was performed with SPSS 10 software package.
**Results:** In the control group, urinary EGF level in women was higher than those in men. Urinary EGF level was found to be lower in the total patient group than those in the control group when gender differences were not taken into account (p = 0.010). Urinary EGF level was lower in the women of the total patient group as compared to women of the control group (p = 0.025), but there was no significant difference for men. No significant difference was found for urinary EGF concentration between diabetic and non-diabetic chronic renal failure groups with regard to gender. While urinary EGF level was lower in the non-diabetic women with chronic renal failure compared to women of the control group (p = 0.025), there was no significant difference between diabetic women with chronic renal failure and women of the control group.
**Conclusion :** It was concluded that the urinary EGF excretion may be a reliable marker for assessment of renal function in non-diabetic women with chronic renal failure.
**Keywords:** Diabetic nephropathy, Renal function, Urinary epidermal growth factor

## TUE-360
## Association between blood Pb and Fe levels in Turkish metallurgy workers and a polymorphism of DMT1 gene

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Lead is a heavy metal that used for years and still used for various industrial purposes. Lead exposure can cause many biological effects depending upon the level and duration. In adults, lead toxicity is most commonly caused by occupation in workplace. Especially after oral exposure, toxic metals are derived from gastrointestinal tract. In the duodenum Divalent Metal Transporter-1 (DMT-1) protein plays a crucial role for dietary Fe uptake but also recognizes nonessential metals such as Pb. Aim of this study