O-18 - The antioxidant system enzymes in the beginning of the booting and flowering stages in leaves of wheat seeded with *Herbaspirillum seropedicae*.

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INTRODUCTION: The development of the vegetative to reproductive phase is a determinant of grain yield. Many responses of the antioxidant system in wheat are known, especially to biotic and abiotic stress. However, little is known about how this response occurs between wheat varieties seeded with the plant growth promoting bacteria *H. seropedicae* and wheat varieties CD 120 and CD 104, when sown with it, responded with increase and loss of productivity, respectively, when they were not fertilized with urea. OBJECTIVES: The objective of this work was to evaluate the enzymatic activities of the antioxidant system in leaves of wheat cv. CD 120 and CD 104, inoculated and/or fertilized with urea. As well as obtaining physiological data from plants at the beginning of the booting and flowering stages. MATERIALS AND METHODS: Wheat (*Triticum aestivum* L.)cv. CD 104 and CD 120 were seeded with 10^6 cells of *H. seropedicae*/seed and/or fertilized with 50 $kg.ha^{-1}$ of nitrogen in the form of urea. Flag sheets were taken for enzymatic activity assays of ascorbate peroxidase (APX), superoxide dismutase (SOD) and glutathione-S-transferase (GST). Other leaves were used to assay membrane stability index (MSI), relative water content (RWC), proline content (PRO) and malondialdehyde (MDA). To control, leaves of wheat varieties not inoculated with the bacteria with and without fertilization were used. DISCUSSION AND RESULTS: Between phenological stages studied, CD 104 cultivar showed, in plants inoculated with *H. seropedicae*, changes of MSI, PRO, MDA and APX in relation to the other treatments. While CD 120 did not show any of all. APX is known to be an H_2O_2 removal enzyme and CD 104 presented higher levels of SOD than CD 120 in the inoculated treatments. CONCLUSION: These data indicate that non-association of CD 104 with the bacterium may be related to the APX response, possibly by a factor affecting photosynthesis.
Keywords: Plant Growth Promoting Bacteria, Phenological Stage, Stress Index / **Supported by:** CNPq

O-19 - Identification of urate hydroperoxide: a pro-oxidant intermediate generated by uric acid oxidation in inflammation

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INTRODUCTION: Uric acid, the final product of purine metabolism in humans, is an alternative physiological substrate for the neutrophil enzyme myeloperoxidase. The one electron oxidation of uric acid by this enzyme generates urate free radical and urate hydroperoxide. The formation of urate hydroperoxide as an intermediate in urate oxidation is potentially responsible for the pro-oxidant and harmful effects of uric acid in inflammation. OBJECTIVES: To prove the formation of urate hydroperoxide in inflammatory cells and to investigate how it alters the redox balance in these cells. MATERIALS AND METHODS: Human leukemic cells (HL-60) were differentiated in neutrophils (dHL-60) and blood peripheral neutrophils were isolated from healthy donors. Cells were activated with phorbol myristate acetate (PMA, 100 ng/mL) in presence or absence of uric acid and analyzed for oxygen consumption, superoxide production by 2-OH-ethidium, hypochlorous acid by oxidation of thionitrobenzoic acid, reduced glutathione (GSH) and glutathione disulfide (GSSG), urate hydroperoxide and its derivative hydroxyisourate by LC/MS/MS. Oxidation of peroxiredoxin 1 was evaluated by non-reducing Western-blot. DISCUSSION AND RESULTS: Oxygen consumption and superoxide production were increased by 7 and 51% in presence of uric acid. Both dHL-60 cells and blood neutrophils efficiently oxidized uric acid to urate hydroperoxide. This oxidation was dependent on myeloperoxidase activity and superoxide production. These results prove the formation of urate hydroperoxide in the oxidative burst of inflammatory cells. Uric acid decreased HOCl levels and GSH/GSSG ratio, showing a pro-oxidant effect of uric acid in spite of the HOCl diminution. The decrease in HOCl is likely due to the competition between chloride and uric acid by myeloperoxidase catalysis. Uric acid increased the oxidation of peroxiredoxin 1, reinforcing the evidence of urate hydroperoxide formation and promotion of a pro-oxidant environment. CONCLUSION: In spite of being considered the main antioxidant in plasma, uric acid can be oxidized in inflammatory conditions leading to an oxidative environment and contributing to tissue damage in inflammation. **Keywords:** Inflammatory cells, Urate hydroperoxide, Oxidation. **Supported by:** CEPID FAPESP 2013/07937-8, CNPq, CAPES, USP

O-21 (PMBqBM) - Regular physical training at low-intensity protects kidneys against an acute oxidative damage

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INTRODUCTION: The regular physical training provides an increasing of antioxidant defense capacity, which may protect several tissues (e.g., heart, liver, kidneys, brain and others), not exclusively the exercised muscles. Interistingly, the oxidative damage is the main process involved in many toxicological processes, as observed with the use of the cisplatin, a relevant antineoplastic drug, which promotes acute renal injury as an adverse effect, limiting its use. OBJECTIVES: This study aimed to investigate the protective effect of physical training against an acute renal damage induced by a single cisplatin dose. MATERIALS AND METHODS: Twelve adult Swiss mouse (30 – 40g) were allocated in two groups: Trained (n=6) or control (n=6). Trained animals swam with a workload of 2% of body mass, for 15 min, 3 times/wk, along 8 weeks. After this period all animals were received a single dose of cisplatin (20 mg/kg i.p.) to induce acute renal damage, and euthanized 96 h after injection. Kidneys were removed and storage for histological, molecular and biochemical assays. The perceptual damaged renal tubules were quantified with optical microscopy, the oxidative stress was measured by thiobarbituric acid-reactive substance (TBARS) concentration using a spectrophotometric method, and quantitative real time PCR to evaluate the renal mRNA expression of caspase 3. All procedures were examined and approved by the local ethical committee for animal research (protocol # 125/2016). DISCUSSION AND RESULTS: The percentage of necrotic tubules (Control 37.1±16.1%; Trained: 11.3±4.5%), TBARS level (Control 0.87±0.42; Trained: 0.37±0.15 µM/mg/mL), and, mRNA expression of Caspase 3 (Trained: 0.54±0.2 Fold change) were smaller in trained group, when compared to control group. CONCLUSION: The regular physical training protected the kidneys against oxidative damage, as demonstrated by the TBARS level, which could explain the smaller tubular necrosis, as well as the mRNA expression of caspase 3. **Keywords:** acute renal injury, oxidative damage, physical training