N-16 (PMBqBM) - Proteomics analysis of leaves of two wheat varieties inoculated in with *Herbaspirillum seropedicae* under nitrogen depletion

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INTRODUCTION: The amount of leaf nitrogen in plants directly interferes with the photosynthetic activity of chloroplasts. And the study of leaves in the interaction of plants and plant growth promoting rhizobacteria, such as *H. seropedicae*, becomes relevant for its biological nitrogen fixation potential. And the proteomic analysis has been a useful tool in the investigation between plants and bacteria under different conditions. OBJECTIVES: The objective of this study was to evaluate the expression of leaf proteins of wheat cultivars (CD104 and CD120) that present opposite responses when sown with *H. seropedicae* SmR1. MATERIALS AND METHODS: Washed and sterilized seeds were cultured in vitro in MS medium with 1.5 x 107 CFU of *H. seropedicae*/mL. For control, uninoculated seeds were grown in MS medium with and without nitrogen source. After 20 days the sheets were taken for extraction of the proteins to SDS-PAGE and mass spectrometry (MS) analysis in a nano UPLC Q-Tof quadrupole/ orthogonal. The obtained MS data were analyzed by the Mascot MS/MS Ions Search platform, using the database of *Triticum aestivum* cv. Chinese Spring and *H. seropedicae*. DISCUSSION AND RESULTS: We identified 29 proteins (including isoforms) on CD 120 that were not found in cv. CD104. And, conversely, 21 proteins were identified on CD 104 that were not observed in CD120. The large number of Chlorophyll a-b isoforms, chloroplastic binding protein, and other photosynthetic-related proteins exclusively expressed on CD 120 are remarkable. These chlorophyll isoforms were the majority in wheat leaves, whose seeds were inoculated with the bacteria. It is possible to observe that the varieties are distinguished by expression of chlorophylls. However, some of these proteins are only expressed in the inoculated situation for CD 120 which does not occur for CD 104. CONCLUSION: These data indicate that the physiological activity of the chloroplast responds to association with the bacterium. **Keywords:** Proteomics analysis, Plant bacteria interaction, Nitrogen

N-17 (PMBqBM) - Antioxidant enzimatic system in *Ricinus communis* L. seeds

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INTRODUCTION: The seeds of *Ricinus communis* L. have a wide industrial applicability because of their oil. The storage is important to maintain the physiological, physical and sanitary quality, delaying to the maximum the aging of the seeds. The seeds have a protective biochemical system, formed by antioxidant enzymes, which also serves as a marker for the evaluation of seed quality. OBJECTIVES: This study aimed to investigate enzymatic response in seeds of the cultivars Nordestina and Paraguaçu stored for eighteen months under different conditions of temperature (T) and relative humidity (RH). MATERIALS AND METHODS: The seeds were packed in cotton bags and tested under four storage conditions during eighteen months: 1- controlled RH and T – cRHT (16,4±0,7ºC and 13,6±2,3% RH); 2- only controlled RH – cRH (23,3±0,6ºC and 15,9±2,3% RH); 3- only controlled T – cT (17,4±0,6ºC and 72,8±2,7% RH); 4- RH and T of laboratory environment - RHTLE (23,81±1,3ºC and 54,92±2,3% RH). Analysis of antioxidant enzymes activity (superoxide dismutase–SOD, catalase–CAT and ascorbate peroxidase–APX) and the microplate spectrophotometric assays standardization of the Glutathione reductase-GR, Dehydroascorbate reductase-DHAR, Glutathione peroxidase-GPX, Guaiacol peroxidase-GPOX were realized. DISCUSSION AND RESULTS: SOD, CAT and APX showed a variation in their activity and they had significant reduction in the with eighteen months were evaluated, due to the aging and the accumulation of reactive oxygen species. The microplate format provided a rapid and convenient way to measure the enzyme activities of the GR, DHAR, GPX, GPOX. Their activity vary between species and months of storage. CONCLUSION: It is concluded that the aging caused during storage can be evaluated through the combination of these antioxidant enzymes. The advantages of the microplate assay are the reduced amounts of sample and reactants required besides the possibility of running several tests simultaneously in the spectrophotometer, with time reduction. **Keywords:** seed quality, humidity control, temperature. **Supported by:** CAPES/PNPD, PMBqBM, UFBA, CNPq, FAPESB, PETROBRÁS and EPAMIG

N-18 (PMBqBM) - Effect of temperature in the activity of antioxidant enzymes in seeds of *Ricinus communis L.* during imbibition

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INTRODUCTION: High temperatures cause several changes in plant metabolism, like the production of reactive oxygen species (ROS) that leads to oxidative stress. Many antioxidant enzymes play an important role to mitigate these effects as: catalase (CAT), ascorbate peroxidase (APX), superoxide dismutase (SOD), dehydroascorbate reductase (DHAR), glutathione-s-transferase (GST) and glutathione reductase (GR). *Ricinus communis L*. is a plant specie that represents great socioeconomic importance for the Brazilian semi-arid region. OBJECTIVES: Considering the increased temperatures in semiarid, the aim of this work was to evaluate the activity of antioxidant enzymes in Ricinus communis L. seeds submitted to different temperatures during imbibition. MATERIALS AND METHODS: It was performed: (1) water imbibition of MPA34/2013 genotype seeds for 30 hours at different temperatures (25, 30 and 35°C); (2) extraction and quantification of total proteins; (3) determination of CAT, APX, SOD, DHAR, GST and GR activity by spectrophotometry. Unembedded seeds were used as experimental control. The results were submitted to variance analysis and the means compared by Tukey test (5%). DISCUSSION AND RESULTS: Seeds didn't show activity variation of SOD and CAT at neither of the tested conditions. APX activity decreased in seeds imbibed at 35°C condition, while DHAR activity showed the highest activity when seeds were submitted to soak at 30°C. GST and GR activity had the highest levels when seeds were kept at 35°C condition, and the lowest at 25°C, respectively. CONCLUSION: R. communis L. seeds antioxidant enzymes are not affected by oxidative stress when soaked during 30 hours under temperatures less than 30°C. DHAR, APX, GST and GR might be biochemical markers to evaluate the enzymatic defense mechanism of this specie under high temperatures. **Keywords:** Castor Bean, Oxidative stress, heat stress / **Supported by:** FAPESB/CNPq