3rd Plant NO Club International Meeting

July 15-16, 2010

Palacký University in Olomouc

Czech Republic

OLYMPUS Your Vision, Our Future

Analytix

eppendorf — Czech & Slovakia

MERCI laboratoř jak má být

Schoeller INSTRUMENTS

CHROMSERVIS

P30. Developmental stage and dose-dependent effect of exogenous nitric oxide application in the antioxidant response of *Medicago truncatula* plants

Chrystalla Antoniou, Panagiota Filippou, Vasileios Fotopoulos

Cyprus University of Technology, Department of Agricultural Sciences, Biotechnology and Food Science, P.O. Box 50329, 3603 Limassol, Cyprus

ca.antoniou@edu.cut.ac.cy, panagiota.filippou@cut.ac.cy, **vassilis.fotopoulos@cut.ac.cy**

Nitric oxide (NO) is a bioactive molecule involved in many biological events that has been reported to display both prooxidant and antioxidant properties in plants. Several reports exist which demonstrate the protective action of low (μM) concentrations of sodium nitroprusside (SNP), a NO donor. It is now commonly accepted that NO acts as a signal molecule in plants that is responsible for the regulation of the expression of many antioxidant enzymes. This study attempts to provide novel insight into the effect of application of low (100μM) and high (2.5mM) concentrations of SNP on mature (40 day) and senescing (65 day) *Medicago truncatula* plants following a combined physiological, biochemical and molecular approach. Higher concentrations of SNP resulted in increased cellular damage levels, reactive oxygen species (ROS) concentration and polyamine content, further induced in older tissues. Antioxidant gene expression levels displayed widely variable regulation under all experimental parameters examined. Overall, senescing *M. truncatula* plants demonstrated greater sensitivity to NO-induced oxidative damage, suggesting a developmental stage-dependent suppression in the plant's capacity to cope with free oxygen and nitrogen radicals.

Acknowledgements: This work was supported by Internal Cyprus University of Technology Grant EX032.