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Program and Abstracts

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Transient and long-term antioxidant gene responses in *Medicago truncatula* following application of exogenous nitric oxide*Fotopoulos, Vasileios*^{1,2}; *Mylona, Photini V.*³; *Polidoros, Alexios N.*¹¹*Institute of Agrobiotechnology, CE.R.T.H., GREECE*, ²*Cyprus University of Technology, CYPRUS*; ³*Agricultural Research Center of Northern Greece, GREECE*

Nitric oxide (NO) is a bioactive molecule involved in many biological events that has been reported to act as both a prooxidant and an antioxidant in plants. Several reports exist which investigate 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 possibly playing a role to induce/stabilize the expression of many antioxidant enzymes. This study attempts to provide novel insight into the effect of application of exogenous NO on transient and long-term antioxidant gene expression levels in the model plant *Medicago truncatula* following inhibition studies and a quantitative real-time PCR approach. Our data suggest that exogenous NO leads to a transient (3hour) induction of several antioxidant genes examined including *Aox*, *Apx* and *Cat*, while expression levels appear to decline after 24 hours. NO- and ROS-dependent signalling pathways were detected to operate and differentially affect induction of the different antioxidant genes. Our data suggest that *Cat* expression is not affected directly by NO or ROS-signalling cascades. *Aox* induction by NO is affected by NO- and ROS-dependent signalling pathways while *Apx* induction by NO has NO-dependent but not ROS-dependent signalling components.

Key words: oxidative stress, nitric oxide, sodium nitroprusside