Comparison of Induced Gene Response to Stressful Treatment in *Spinacia oleracea* and *Brassica napus*

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Abstract

To study of some photosynthetic and defense genes expression in *Spinacia Oleracea* (cv. Vienna) and *Brassica napus* (cv. Falcon) seeds were grown at growth room. In a series of primary experiment a varied range of stress treatment with different concentration were compared. Finally, three treatments included methyl viologen, silver nitrate and 3-amin-trizoil have been selected for further experiment. All treatments were sprayed on the leaves at the maximum of vegetative growth stage. A CRD (completely Randomized Design) order has been used with four replicates. In order to assess cellular oxidative levels the TBARM assay has been used. Sampling has been done at intervals 6, 12, 24, 48 and 72 hours from the leaf treated. To analyzed gene expression and northern hybridization, sampling has been done only 48 hours after the leaves had sprayed. Since of so many results, here we have reported all results included percentage of cell death, TBARM amount and gene expression, for all the treatments only 48h after treatment sprayed. The results showed all treatments have altered the amount of cell death, TBARM and gene expression via increase of reactive oxygen species (ROS). The expression of photosynthetic gene *RBCS* declined by increasing of stressful treatment concentration. Sprayed pre-treatment ascorbic acid caused relative gene activity increase up to 50%. Also, this improved the physical damage and decline of TBARM by quenching of ROS. For the rest of genes although there were some differences among gene expression in depend on which plant or treatment has been checked out, but in general all genes showed a positive response to stressful treatments. For these genes with no exception using pre-treatment of ascorbic acid caused some altered toward control expression.

Keywords: Gene expression, Spinach, Brassica napus, Ascorbic acid, Antioxidant

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