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## EFFECTS OF LIGHT AND UV-C RADIATION ON THE TRANSCRIPTIONAL ACTIVITY OF COP1 AND HY5 GENE HOMOLOGUES IN BARLEY

Photomorphogenic regulators COP1 (Constitutive photomorphogenic 1) and HY5 (Hypocotyl5) play a key role in plant development, and are principally important during the transition from dark to light growth. AtCOP1 and AtHY5 are also involved in the transcriptional control of photolyase genes. Here we characterized the expression of barley COP1 and HY5 gene homologues in dark- and light-grown seedlings in relation to UV-damage response. Etiolated and green 6-days old barley seedlings were irradiated with UV-C and then exposed to light. Leaf samples were collected from control and treated plants immediately (0h) and at different time-points afterwards. Transcriptional activities of barley COP1 and HY5 homologues were assessed by real-time RT-PCR normalizing against 18S rRNA as internal control. In etiolated leaves we found ten-fold less levels of COP1 which, after 1h light exposure reached the amounts detected in the green ones. Barley HY5 mRNA amount was low in the dark-grown seedlings and after 1h lighting increased drastically to levels exceeding those measured in the green leaves. In the irradiated plants both genes were up-regulated but to a lesser extent if compared to the control ones; however, the increase was still significant in comparison to the 0h time-point. The enhanced transcription of barley COP1 under light was unexpected in view of the well-known role of COP1 as a negative regulator of plant photomorphogenesis, but it is in line with a previous report for a positive influence on UV-B response. HY5 is recognized as stimulator of light-inducible genes and the data presented here support such a role for barley HY5 homologue as well. According to our knowledge this is the first investigation of the activity of COP1 and HY5 homologues in barley as well as regarding de-etiolation and UV-stress.

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