Amended synthesis of vitamin B_6 causes altered antioxidant responses to supplemental UV-B in *Arabidopsis thaliana*

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We previously showed that UV-B can increase metabolic hydrogen peroxide (H_2O_2) concentrations in leaves and that it is able to convert H_2O_2 to hydroxyl radicals ($^{\bullet}OH$) (Czégény et al. 2014). Thus, efficient scavenging of H_2O_2 and $^{\bullet}OH$ are expected to be important aspects in a successful acclimation to UV-B. Vitamin B_6 has an essential role both in plant development and stress tolerance (Raschke et al. 2011). In addition to their coenzyme function in several biosynthetic pathways (Drewke and Leistner 2001), B_6 derivates are potent quenchers of ROS (Havaux et al. 2009, Matxain et al. 2009).
In this study, we used *Arabidopsis thaliana* mutants (*rsr4-1*) reduced in B_6 biosynthesis (Wagner et al. 2006) to investigate how vitamin B_6 derivates of contribute to the plants' acclimation to supplemental UV-B in growth chambers. In response to UV-B both mutant and wild type (C24) leaves altered their antioxidant profiles – including increases in B_6 derivates. Wild type plants avoided oxidative stress via increasing peroxidase acitivities. Mutants, however, showed elevated catalase and markedly decreased SOD activities, although these were not sufficient to maintain leaf photochemistry. Responses are also discussed in terms of changes in leaf B_6 profiles and ROS reactivities of these compounds.

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