Supplementary Material (ESI) for Photochemical & Photobiological Sciences

Arabidopsis *RADICAL-INDUCED CELL DEATH1* is involved in UV-B signaling

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Supplemental Materials

Fig. S1

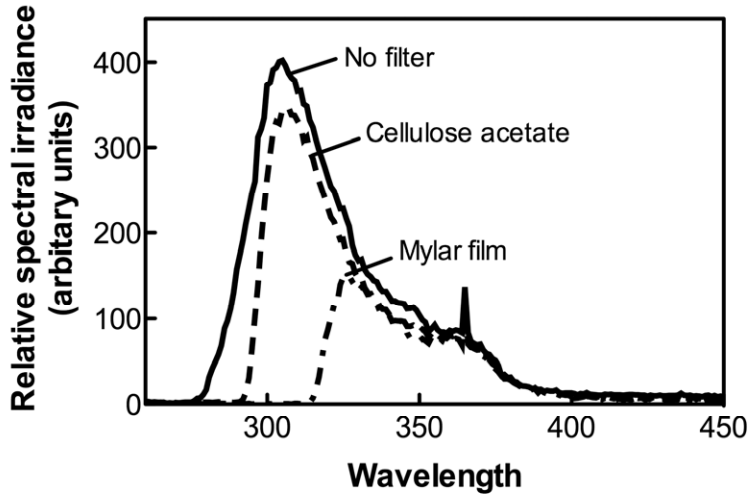

Fig. S1 Relative emission spectrum of the unshielded UV-B lamps (no filter) and relative irradiance spectra under the cellulose acetate filter (transmitting both UV-A and UV-B) and Mylar film (transmitting only UV-A as control).

Fig. S2

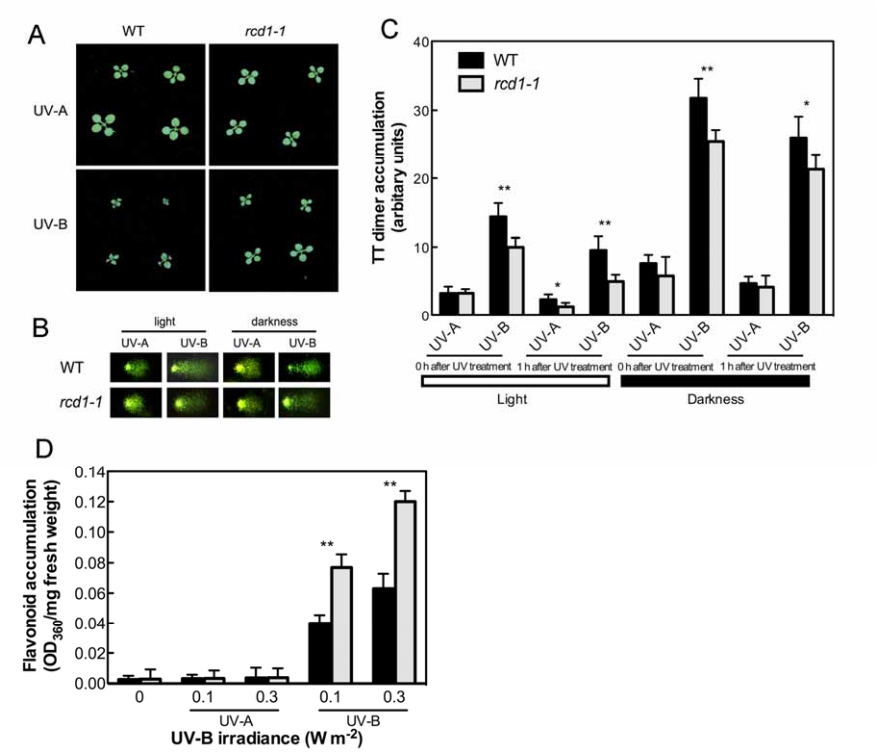

Fig. S2 Phenotypic analysis of *rcd1-1* mutant under UV-B radiation.

(a) *rcd1-1* mutants are tolerant to supplementary UV-B. Ten-days old wild type and *rcd1-1* mutant plants were grown in white light (100 µmol m^{-2} s^{-1}) with or without UV-B radiation (0.3 W m^{-2}) for 3 days.

(b) and (c) TT dimer accumulation in wild-type (black bars) and *rcd1-1* (gray bars) mutant under UV-B radiation. Wild type Col and *rcd1-1* mutant plants grown for 3 weeks in white light (100 µmol m^{-2} s^{-1}) were transferred to UV-B radiation (0.4 W m^{-2}) for 5 h in white light or darkness. Leaf tissue was harvested immediately after UV-B treatment (0 h after UV-B radiation) or 1 h after UV-B radiation. (b), Typical comet assay images (with T4 endonuclease V treatment) illustrated DNA damage in wild-type and *rcd1-1* mutant during UV-B radiation for 5h. (c), TT dimer accumulation calculated by Olive Tail Moment (OTM) from comet images. Data shown are means (±standard deviation) of three independent replications.

(d) UV-B-induced flavonoid accumulation is increased in *rcd1-1*. Wild type (black bars) and *rcd1-1* (gray bars) mutant plants grown for 3 weeks in white light (100 μmol m^{-2} s^{-1}) were transferred to various irradiance of UV-B for 12 h in white light. Data shown are means (±standard deviation) of three independent replications.

Fig. S3

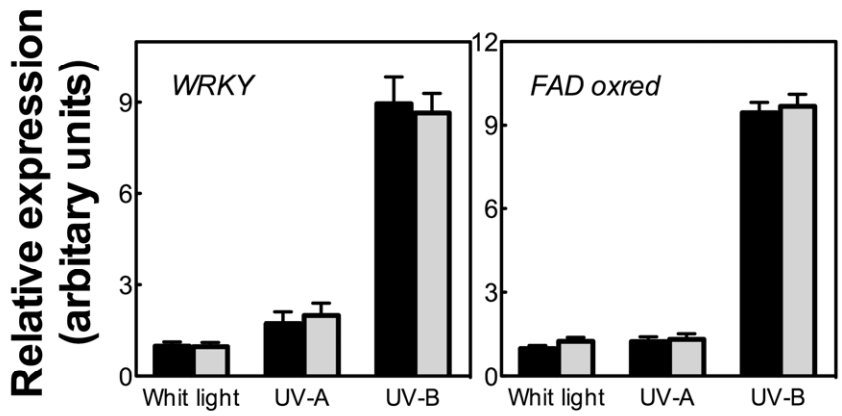

Fig. S3 Relative expression of UV-B-induced UVR8-regulated, HY5-independent genes in wild-type (black bars) and *rcd1-1* mutant (gray bars) under UV-B radiation. Wild type Col and *rcd1-1* mutant plants grown for 3 weeks in a low fluence rate of (30 μmol m^{-2} s^{-1}) white light were transferred to UV-B radiation (0.3 W m^{-2}) for 5h in white light. mRNA levels of *WAKY* and *FAD oxred* were quantified by real-time reverse transcriptase-PCR. The relative expression of transcripts was normalized with respect to *18S* rRNA. Gene expression in wild type without UV radiation was arbitrarily set as 1. Data shown are means (±standard deviation) of three independent replications. There are no significant differences between the wild type and the *rcd1-1* mutant.