

Supplementary Materials

# The Impact of Far-Red Light Supplementation on Hormonal Responses to Cold Acclimation in Barley

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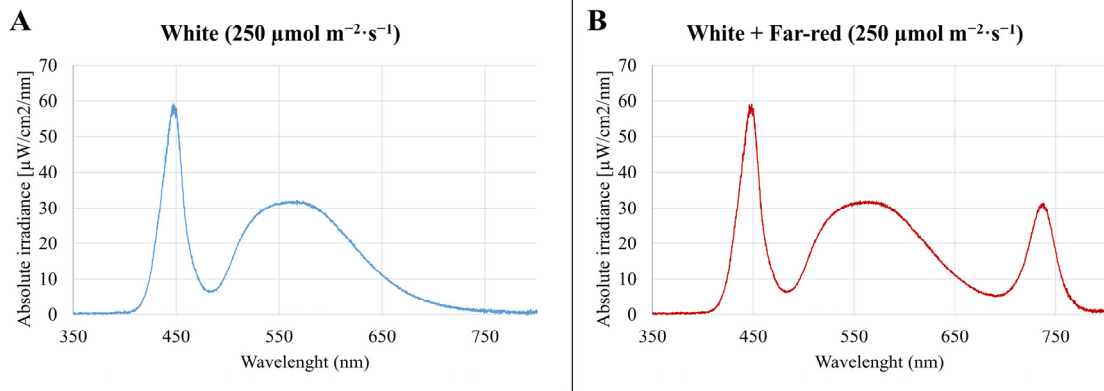
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**Figure S1.** Spectral composition of modulated light treatments at  $250 \mu\text{mol m}^{-2}\cdot\text{s}^{-1}$  intensity. **A)** the spectral composition of the white light, **B)** the spectral composition of white light supplemented by extra far-red light (Kovács et al., 2020).

Kovács, T., Ahres, M., Pálmai, T., Kovács, L., Uemura, M., Crosatti, C., Galiba, G., 2020. Decreased r:Fr ratio in incident white light affects the composition of barley leaf lipidome and freezing tolerance in a temperature-dependent manner. *Int. J. Mol. Sci.* 21, 1–24. <https://doi.org/10.3390/ijms21207557>

**Table S1.** Primers used for the qRT-PCR.

Name	Abbreviation	Forward	Reverse	Reference
9-cis-epoxycarotenoid dioxygenase	NCED1	CTCTCCTACATCTCGCCTGC	CCTTCTGTAGCTGGGGTTCC	own design
cytokinin dehydrogenase 9	CKX9	TGATCTCTTCCGTGCTGCTC	CGATCCTGGCCCCGAGTAATG	own design
aldehyde oxidase 2	AO2	CGCTCTCTCGTTCGACATCA	GGAGCCCGCATTACTGACTT	own design
short-chain dehydrogenase 2	SDR2	GCCATCTCGCCCAACTACATCC	CGGCGCCTCCATCTCGT	Seiler et al., 2011
phenylalanine ammonia-lyase	PAL	TGCTCGTCCGTGTCAATACC	CGTTGGCGTTGAGAAGTGTG	own design
lipoxygenase	LOX	GAAGGTGGAGGTCAAGGAGC	CCCCGACTTGTTGCTCTTCT	own design
acetyl-CoA acetyltransferase	CoAA	ATTGTTGTGGCAGGTGGGAT	CAACGAGGCTGTCATGTCC	own design
zeaxanthin epoxidase	ZEP1	GCGAGAGGCGGGGAGAAGT	TGGTGACAAGGGGTGGCTGAAG	Seiler et al., 2011
indole-3-pyruvate monooxygenase	YUCCA5	GCAGCAGACAACAACAGCAA	CTTTTGCTTTGGTGGCTGCT	own design

Seiler, C., Harshavardhan, V.T., Rajesh, K., Reddy, P.S., Strickert, M., Rolletschek, H., Scholz, U., Wobus, U., Sreenivasulu, N., 2011. ABA biosynthesis and degradation contributing to ABA homeostasis during barley seed development under control and terminal drought-stress conditions. *J. Exp. Bot.* 62, 2615–2632. <https://doi.org/10.1093/jxb/erq446>

**Table S2.** Table summarizing the results of the hormone analysis FR-M: FR treatment at 15°C for 10 days. FR-M/FR-C(28): FR pre-treatment at 15°C for 10 days followed by cold stress at 5°C for 7 days (cold treatment began on day 28). FR-C(18): Combined cold (5°C) and FR treatment for 7 days (treatment began on day 18). W – white light; FR - far red-enriched light.

Treatments	Temperatures (°C)	Time/Light Regimes	Averages/Standard Deviations	ABA	PA	9OH-ABA	IAA	OxIAA	PAA	SA	JA	cis-OPDA	cZ	tZ	iPR	cZR	cZOG	iP7G	iP9G
FR-M	15°C	day 1 W	AVG. SD	16.15 2.18	36.61 6.66	15.93 3.15	50.11 5.35	35.04 2.72	759.37 98.89	282.60 19.96	48.55 20.21	5164.41 1943.06	224.42 29.43	3.01 1.31	17.51 5.77	246.67 10.15	68.35 3.58	28.65 5.72	0.60 0.67
		day 1 FR	AVG. SD	27.49 1.94	75.05 20.07	15.48 4.87	78.55 8.53	40.58 5.78	999.72 34.90	293.83 48.17	35.61 8.10	1335.20 122.38	350.48 57.17	6.32 1.99	10.62 0.90	265.34 32.83	68.55 8.93	29.59 1.02	2.23 3.13
		day 10 W	AVG. SD	15.30 0.98	114.28 13.51	30.01 2.19	63.04 5.13	38.74 3.21	686.19 37.14	295.61 48.05	31.06 7.98	3238.08 669.72	237.18 29.59	2.82 0.71	12.91 0.78	180.22 33.44	117.40 8.82	34.94 0.93	1.61 0.57
		day 10 FR	AVG. SD	25.15 1.12	96.09 11.11	24.34 4.32	80.34 12.58	43.36 9.53	826.44 131.37	270.33 61.11	16.48 3.08	466.24 27.57	109.06 24.99	6.57 1.19	2.98 1.91	138.14 23.79	97.66 5.03	130.26 30.91	1.35 1.28
FR-M / FR-C(28)	5°C	day 1 W	AVG. SD	37.34 5.75	147.39 9.28	24.08 3.76	71.98 1.35	65.41 4.84	782.92 7.96	309.28 38.98	8.44 0.97	1287.76 208.24	542.16 42.65	2.45 1.31	14.32 0.64	199.74 34.06	126.23 9.82	44.11 0.76	0.47 0.42
		day 1 FR	AVG. SD	27.64 3.46	93.67 11.57	19.19 0.46	67.12 8.76	33.00 4.16	865.42 86.45	251.68 26.81	2.44 2.17	477.63 47.79	85.83 10.10	4.91 0.63	5.40 1.70	166.86 33.03	86.11 18.06	55.02 12.70	0.49 0.47
		day 7 W	AVG. SD	13.29 2.08	183.10 13.19	48.42 4.18	35.67 5.04	75.34 10.05	355.05 13.14	244.47 30.23	31.71 3.45	511.88 25.15	368.06 35.28	3.22 1.71	3.96 1.67	94.61 9.18	106.06 10.54	55.01 6.38	4.48 3.85
		day 7 FR	AVG. SD	16.64 2.46	114.49 3.13	17.15 0.34	53.96 8.04	29.85 0.09	480.22 13.56	265.86 53.11	13.04 1.01	447.72 1.21	114.57 9.05	4.00 0.96	4.44 2.02	100.54 21.30	100.75 12.30	23.51 8.37	0.25 0.42
FR-C(18)	5°C	day 1 W	AVG. SD	26.21 3.93	183.26 17.52	43.74 14.90	50.07 10.81	43.16 5.92	1416.47 418.86	368.24 25.35	80.32 12.18	481.46 70.20	198.67 31.21	7.01 2.18	37.30 11.40	91.81 16.93	67.03 9.95	9.54 1.08	0.85 0.56
		day 1 FR	AVG. SD	30.99 4.16	271.55 19.63	46.81 10.14	41.34 4.24	43.86 14.57	3228.98 337.19	244.99 14.76	71.15 18.03	336.91 39.62	563.48 73.72	4.78 0.38	113.62 16.81	295.34 50.64	68.52 6.29	10.50 2.26	0.87 0.46
		day 7 W	AVG. SD	23.63 1.90	169.10 23.31	48.12 12.92	69.67 10.70	40.23 13.00	2020.28 125.26	357.24 16.28	115.09 25.76	391.58 60.64	330.49 38.75	14.03 3.70	96.93 31.33	185.79 60.43	65.42 4.45	17.74 7.53	1.59 0.54
		day 7 FR	AVG. SD	22.26 2.95	151.72 41.01	40.00 8.42	57.57 11.01	66.87 15.98	2305.86 522.77	180.20 43.20	73.01 19.85	381.76 163.96	1149.73 86.62	16.24 4.94	193.77 29.67	343.82 39.21	53.63 7.88	18.13 1.27	0.51 0.36