

Supplementary data

Melatonin and nanocopper synergistically regulate cadmium toxicity in *Brassica napus*: Evidences from photosynthesis phenomics, oxidative metabolism, and multiple defense responses

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Table S1 Oligonucleotide primer sequences used for qRT-PCR analysis

Gene name	Primer sequences (5' →3')	
	Forward sequence	Reverse sequence
Actin	ACGACAGCAGAGCGGGAAAT	GGCTGGAACAGGACCTCTGG
Photosystem II protein D1(<i>BnPsbA</i>)	GTATTATTATCGCCTTCATCG	AGGACGCATACCCAAACG
Photosystem II CP47 protein (<i>BnPsbB</i>)	TAGGCGTAACGGTGGA	AACATCTCGGAACAAGG
Photosystem II CP43 protein (<i>BnPsbC</i>)	TAATACGGCTTATCCGAGTGAGTTT	TAATACGGCTTATCCGAGTGAGTTT
Oxygen-evolving enhancer protein 1(<i>BnPsbO</i>)	AGAGAGGCTCGGTGAAATAGA	CCAATCCCAGGGAACAGTAAAG
Oxygenic phototrophs subunit (<i>BnCHLD</i>)	ATGTTGATTATGGCCGAAAG	TTTCCTGAGATGGCAATACC
Magnesium protoporphyrin IX methyltransferase (<i>BnCHLM</i>)	ATGTTGGCTGATGACCGTCCT	CAGAAGCCGAGACGACAGCA
Chlorophyll a oxidase (<i>BnCAO</i>)	AGCAGATTCCCTTCATGCAC	AAATGTTTGCTCCGTTGACC
Senescence-related gene (<i>BnSAG12</i>)	AGAGAATACCAAACCAAACCGAA	GCAACTCCCAAATCTCAGGG
Chlorophyll synthase (<i>BnCHLG</i>)	CTACGAACTCGTCAC CAAAG	AGGTCCAAACCAATGATTCT



ZD 622

Control

CuO NPs + MEL

Cd

**CuO NPs + MEL
+ Cd**



ZD 635

Fig. S1