

Supplementary Material

Flavonoid Glycosides in *Brassica* Species Respond to UV-B Dependence on Exposure Time and Adaptation Time

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Table S1: Kaempferol diglycosides of different *Brassica* species in $\mu\text{g/g}$ DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

K: kaempferol; soph: sophorose; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: sinapoyl; h: hour; cond: condition

<i>Brassica</i>			K-3-soph	K-3-cou-soph	K-3-caf-soph	K-3-fer-soph	K-3-hfer-soph	K-3-sin-soph
<i>rapa</i>	Day 1	h	n.d.	n.d.				
		cond			**	**		
		h × cond					*	
	Day 4	h	n.d.	n.d.		*		*
		cond						
		h × cond						
	Day 7	h	n.d.	n.d.				*
		cond				***		
		h × cond						
<i>nigra</i>	Day 1	h	n.d.	n.d.	***	n.d.		***
		cond			**		**	

		h × cond			***			
	Day 4	h	n.d.	n.d.	***	n.d.		
		cond						*
		h × cond						
	Day 7	h	n.d.	n.d.		n.d.	*	***
		cond						
<i>oleracea</i>	Day 1	h × cond						
		h	n.d.	n.d.		n.d.		
		cond						
		h × cond						
	Day 4	h	n.d.	n.d.	**	n.d.		*
		cond						
		h × cond						
	Day 7	h	n.d.	n.d.	***	n.d.		
		cond					**	
		h × cond			***			
<i>juncea</i>	Day 1	h	n.d.	n.d.			n.d.	
		cond			*			
		h × cond						*
	Day 4	h	n.d.	n.d.		*	n.d.	
		cond						
		h × cond			*			
	Day 7	h	n.d.	n.d.			n.d.	
		cond						
		h × cond						***
<i>napus</i>	Day 1	h	n.d.	***			n.d.	
		cond						
		h × cond						
	Day 4	h	n.d.				n.d.	
		cond						

<i>carinata</i>	Day 7	h × cond						
		h	n.d.	*	*	***	n.d.	
		cond						
	Day 1	h × cond						
		h	n.d.	n.d.		n.d.		*
		cond					*	***
	Day 4	h × cond						
		h	n.d.	n.d.		n.d.		
		cond			*		*	
	Day 7	h × cond						
		h	n.d.	n.d.		n.d.		
		cond						
h × cond							***	

Table S2: Quercetin diglycosides of different *Brassica* species in $\mu\text{g/g}$ DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

Q: quercetin; soph: sophorose; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: sinapoyl; h: hour; cond: condition

<i>Brassica</i>			Q-3-soph	Q-3-cou-soph	Q-3-caf-soph	Q-3-fer-soph	Q-3-hfer-soph	Q-3-sin-soph
<i>rapa</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 4	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 7	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
<i>nigra</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 4	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 7	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
<i>oleracea</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond						
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	*
		cond						
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond						

		cond						*
<i>juncea</i>	Day 1	h × cond						
		h	n.d.	n.d.	n.d.	n.d.		
	Day 4	cond						
	Day 4	h × cond						
		h	n.d.	n.d.	n.d.	n.d.		
	Day 7	cond						
		h × cond						
<i>napus</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 4	h × cond						
	Day 4	h	n.d.	n.d.	n.d.	n.d.		n.d.
		cond						
	Day 7	h × cond						
		h	n.d.	n.d.	n.d.	n.d.		n.d.
<i>carinata</i>	Day 1	cond						
		h × cond					n.d.	n.d.
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	Day 7	cond						
		h × cond						
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond						
		h × cond						

Table S3: Kaempferol triglycosides of different *Brassica* species in $\mu\text{g/g}$ DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

K: kaempferol; soph: sophoroside; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: sinapoyl; h: hour; cond: condition

<i>Brassica</i>			K- 3- soph- 7-glc	K- 3-cou- soph- 7-glc	K- 3-caf- soph- 7-glc	K- 3-fer- soph- 7-glc	K- 3-hfer- soph- 7-glc	K- 3-sin- soph- 7-glc	K- 3-disin- soph- 7-glc	K- 3-sin,fer- soph- 7-glc	
<i>rapa</i>	Day 1	h									
		cond									
		h × cond									
	Day 4	h		**			*		**		
		cond			*						
		h × cond									
	Day 7	h					*				
		cond									
		h × cond									
<i>nigra</i>	Day 1	h				*	*		n.d.	n.d.	
		cond									
		h × cond									
	Day 4	h		***						n.d.	n.d.
		cond		*							
		h × cond									
	Day 7	h					*			n.d.	n.d.
		cond									
		h × cond									
<i>oleracea</i>	Day 1	h							***	***	
		cond									
		h × cond				*					

<i>juncea</i>	Day 4	h	***	***	***	***	***		**	***
		cond	**		*	***	*	***		
		h × cond		**	*	***	***			
	Day 7	h								
		cond		***	**	***	*	***		***
		h × cond	***							
	Day 1	h				*				
		cond		*		*				
		h × cond								
Day 4	h		*					***		
	cond									
	h × cond									
Day 7	h							***		
	cond	*	*					*		
	h × cond									
Day 1	h			***		***		n.d.	n.d.	
	cond									
	h × cond									
Day 4	h							***	n.d.	n.d.
	cond			*						
	h × cond								n.d.	n.d.
Day 7	h									
	cond									
	h × cond									
Day 1	h	*								
	cond									

Day 4	h × cond			*			
	h		*	***		n.d.	n.d.
	cond	*	*	***			
Day 7	h × cond	*	*				
	h		*		***	n.d.	n.d.
	cond						
	h × cond						

Table S4: Quercetin triglycosides of different *Brassica* species in $\mu\text{g/g}$ DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

Q: quercetin; soph: 9inapoyl9; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: 9inapoyl; h: hour; cond: condition

<i>Brassica</i>			Q-3-soph- 7-glc	Q-3-cou- soph-7- glc	Q-3-caf- soph-7- glc	Q-3-fer- soph-7- glc	Q-3-hfer- soph-7- glc	Q-3-sin- soph-7- glc
<i>rapa</i>	Day 1	h		n.d.		n.d.		
		cond						
		h × cond	*					
	Day 4	h		n.d.		n.d.		**
		cond						
		h × cond	*					
Day 7	h		n.d.		n.d.			
	cond				*			
	h × cond							
<i>nigra</i>	Day 1	h		n.d.	n.d.	n.d.	***	n.d.
		cond					**	
		h × cond					***	
	Day 4	h		n.d.	n.d.	n.d.		n.d.
		cond	*					
		h × cond						
Day 7	h		n.d.	n.d.	n.d.		n.d.	
	cond							
	h × cond							
<i>oleracea</i>	Day 1	h		n.d.		n.d.	n.d.	***
		cond						
		h × cond						
	Day 4	h	**	n.d.	***	n.d.	n.d.	**
cond				***				

	Day 7	h × cond h cond		***	n.d.	n.d.	***
<i>juncea</i>	Day 1	h × cond h cond	n.d.	*	n.d.		n.d.
	Day 4	h × cond h cond	n.d.		*		n.d.
	Day 7	h × cond h cond	n.d.		n.d.		n.d.
<i>napus</i>	Day 1	h × cond h cond	n.d.	n.d.	n.d.	n.d.	n.d.
	Day 4	h × cond h cond	n.d.	n.d.	n.d.	n.d.	n.d.
	Day 7	h × cond h cond	n.d.	n.d.	n.d.	n.d.	n.d.
<i>carinata</i>	Day 1	h × cond h cond	n.d.		n.d.	***	***
	Day 4	h × cond h cond	n.d.	n.d.	n.d.	*	n.d.
	Day 7	h × cond h	n.d.	n.d.	n.d.	n.d.	n.d.

cond
h × cond

Table S5: Kaempferol tetraglycosides of different *Brassica* species in $\mu\text{g/g}$ DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

K: kaempferol; soph: 12inapoyl12; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: 12inapoyl; h: hour; cond: condition

<i>Brassica</i>			K-3-soph-7-diglc	K-3-cou-soph-7-diglc	K-3-caf-soph-7-diglc	K-3-fer-soph-7-diglc	K-3-hfer-soph-7-diglc	K-3-sin-soph-7-diglc	K-3-disin-striglc-7-glc
<i>rapa</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
<i>nigra</i>	Day 1	h	n.d.	n.d.	***				n.d.
		cond							
		h × cond					**		
	Day 4	h	n.d.	n.d.	***		***	***	n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.		*			n.d.
		cond							
		h × cond					*		
<i>oleracea</i>	Day 1	h	n.d.	n.d.	n.d.		**		
		cond							
		h × cond							
Day 4	h	n.d.	n.d.	n.d.	*	***	*	**	

		cond					*		**
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.		**		*
		cond				***	***	***	*
		h × cond							
<i>juncea</i>	Day 1	h	n.d.	n.d.	n.d.		n.d.		n.d.
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.		n.d.		n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.		n.d.		n.d.
		cond							
		h × cond							
<i>napus</i>	Day 1	h	n.d.	n.d.	n.d.	***	*		
		cond				*			
		h × cond				*			
	Day 4	h	n.d.	n.d.	n.d.	n.d.	***		
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.		n.d.			
		cond							
		h × cond							*
<i>carinata</i>	Day 1	h	n.d.	n.d.	n.d.				
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.				
		cond							
		h × cond							

Day 7

h

n.d.

n.d.

n.d.

cond

*

**

h × cond

**

Table S6: Quercetin tetraglycosides of different *Brassica* species in µg/g DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

Q: quercetin; soph: 15inapoyl15; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: 15inapoyl; h: hour; cond: condition

<i>Brassica</i>			Q-3-soph-7-diglc	Q-3-cou-soph-7-diglc	Q-3-caf-soph-7-diglc	Q-3-fer-soph-7-diglc	Q-3-hfer-soph-7-diglc	Q-3-sin-soph-7-diglc	Q-3-disin-triglc-7-glc
<i>rapa</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
<i>nigra</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
<i>oleracea</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.		*
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.		*
		cond							
		h × cond							

		cond						***	
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.		
		cond						***	
		h × cond							
<i>juncea</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
		cond							
		h × cond							
<i>napus</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond							
		h × cond							*
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond							
		h × cond							*
<i>carinata</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond							
		h × cond							
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
		cond							
		h × cond							*

Day 7

h

n.d.

n.d.

n.d.

n.d.

n.d.

n.d.

cond

h × cond

Table S7: Quercetin tetraglycosides of different *Brassica* species in µg/g DW. Asterix indicate differences due to the UV-B treatment at the certain time point significant at * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.005$

Q: quercetin; soph: sinapoyl; glc: glucose; cou: coumaroyl; caf: caffeoyl; fer: feruloyl; hfer: hydroxyferuloyl; sin: sinapoyl; h: hour; cond: condition

<i>Brassica</i>			Chl	Cou- mal	Caf-mal	Fer-mal	Hfer- mal	Sin-mal	Disin- gent	Sin,fer- gent	Trisin- gent	Disin,fer- gent
<i>rapa</i>	Day 1	h										
		cond										
	Day 4	h			*			***		*		
		cond	*				**					
	Day 7	h										n.d.
		cond	*				*					
<i>nigra</i>	Day 1	h	***	n.d.	n.d.	n.d.	n.d.	n.d.				
		cond	*									
	Day 4	h		n.d.	n.d.	n.d.	n.d.	n.d.		*		
		cond										
	Day 7	h		n.d.	n.d.	n.d.	n.d.	n.d.				
		cond								*		
		h × cond									*	

<i>oleracea</i>	Day 1	h	n.d.	n.d.	n.d.	n.d.	n.d.	*	*	*	*
		cond h × cond									
	Day 4	h	n.d.	n.d.	n.d.	n.d.	n.d.	***	***		***
		cond h × cond								*	*** ***
	Day 7	h	n.d.	n.d.	n.d.	n.d.	n.d.				
		cond h × cond								*	
<i>juncea</i>	Day 1	h		*					*		
		cond h × cond							*		
	Day 4	h									
		cond h × cond		***		**		*			
	Day 7	h	*		***		***	***			n.d.
		cond h × cond									
<i>napus</i>	Day 1	h	*	*	***			*			
		cond h × cond									
	Day 4	h		*	**	***	***			*	
		cond		**	*	*	***				

		h × cond									
	Day	h									
	7										
		cond									
		h × cond									
<i>carinata</i>	Day	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	1										
		cond									
		h × cond									
	Day	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	4										
		cond									
		h × cond									
	Day	h	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	7										
		cond	***								
		h × cond	***								