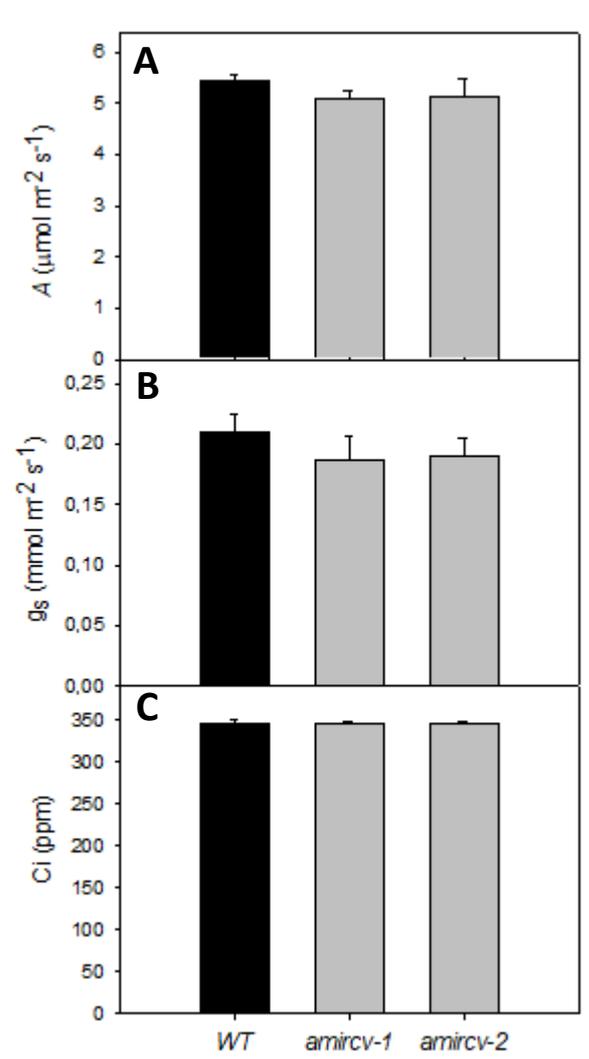


## FIGURES

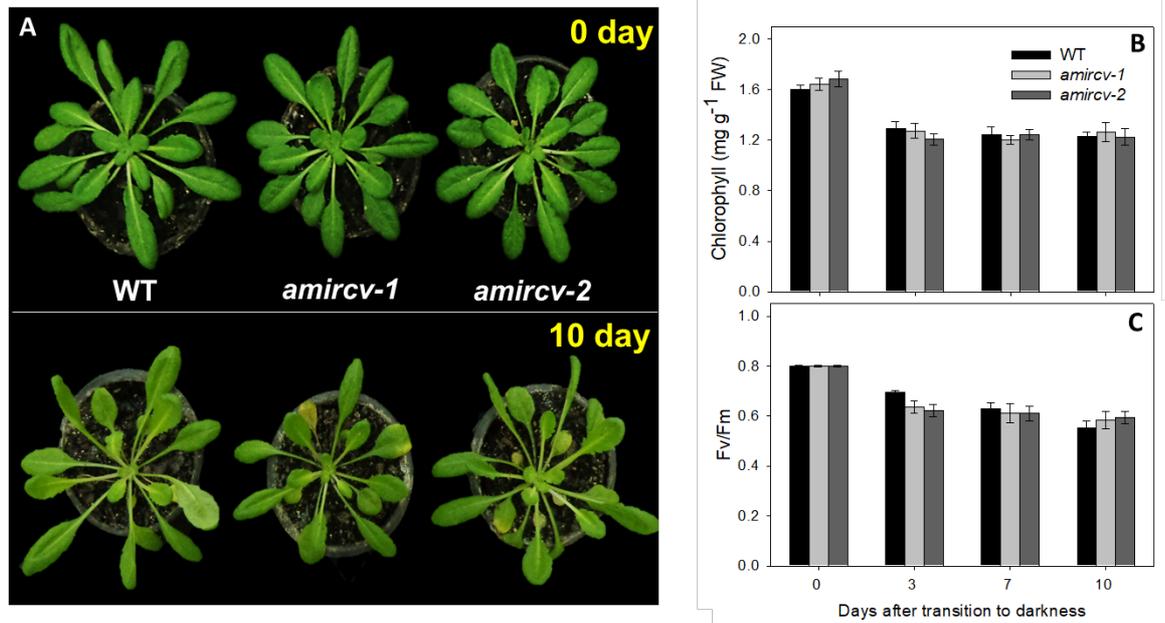
Figure 1



**Figure 1. Gas-exchange parameters are not affected in wild-type (WT) and *amircv* mutants.**

(A) net CO<sub>2</sub> assimilation rate ( $A$ ), (B) stomatal conductance ( $g_s$ ), (C) internal CO<sub>2</sub> concentration ( $C_i$ ). Values presented are means  $\pm$  SE of five biological replicates per genotype. No significant differences were determined by the Student's  $t$  test ( $P < 0.05$ ) between WT and mutant lines in each time point analyzed.

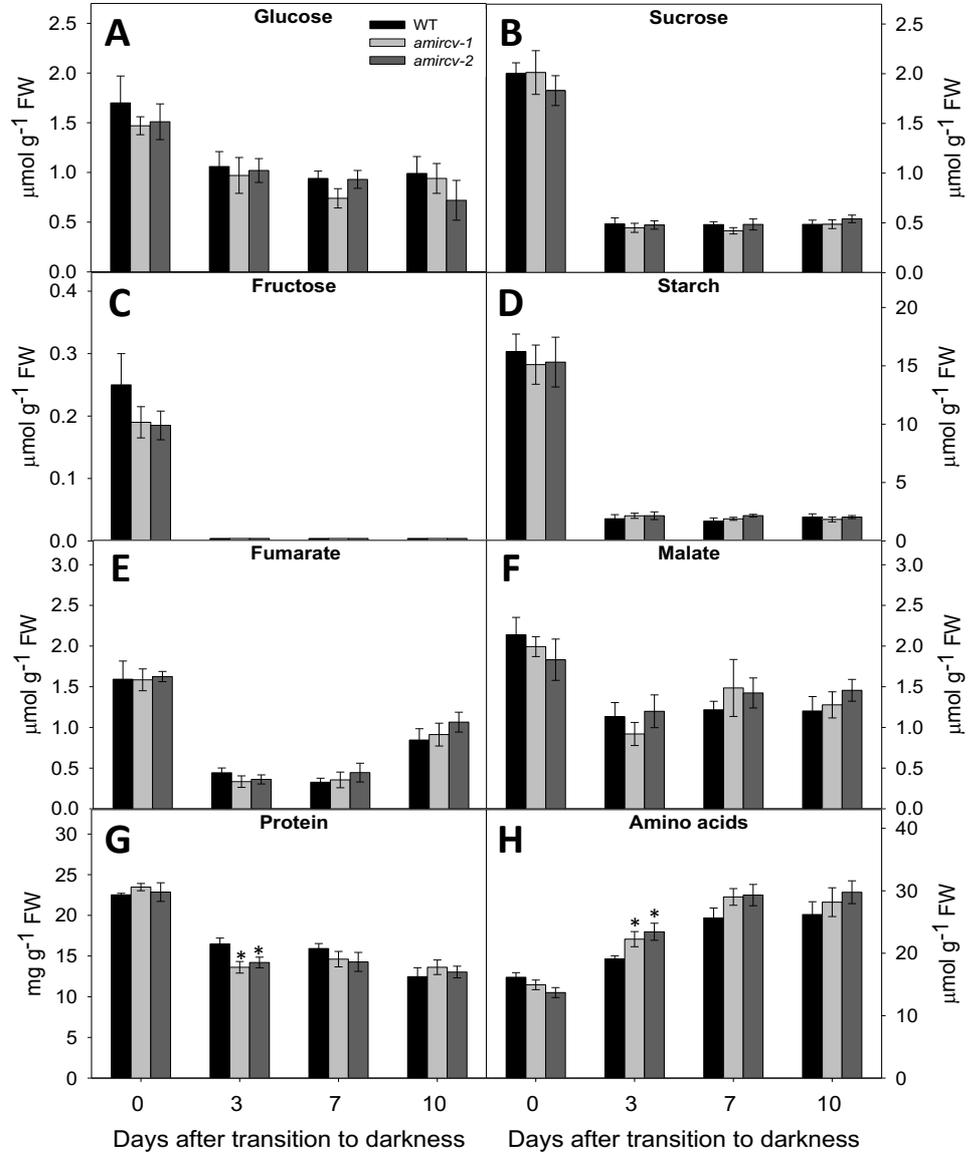
**Figure 2**



**Figure 2. Phenotype of *amircv* Arabidopsis mutants under extended darkness**

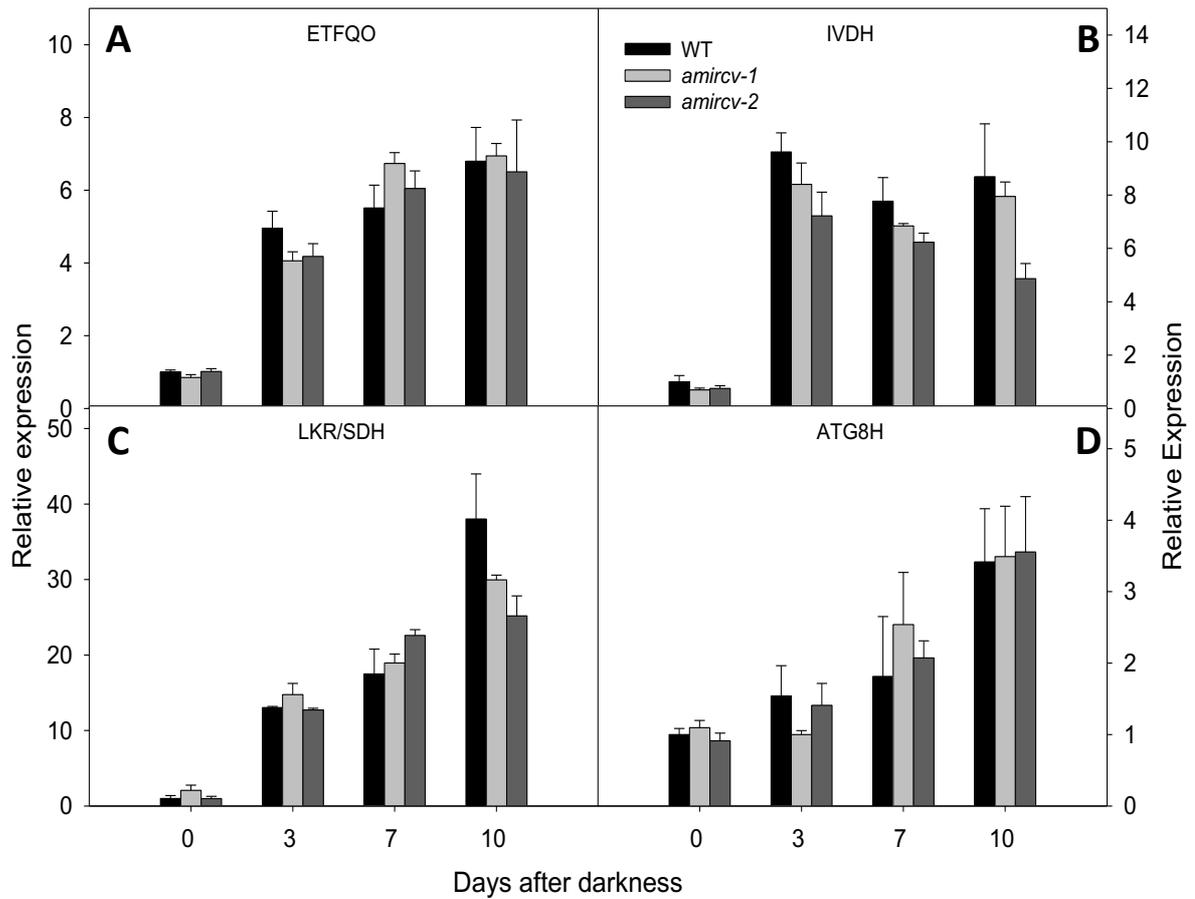
(A) Images of 4-week-old, short-day-grown Arabidopsis plants immediately (0 day) and after treatment for 10 days in darkness conditions; (B) Chlorophyll content; (C); Fv/Fm, the maximum quantum yield of PSII of leaves of 4-week-old plants after further treatment for 0, 3, 7 and 10 d in darkness. Values are means  $\pm$  SE of five independent samplings; no significant differences were determined by the Student's t test ( $P < 0.05$ ) between wild-type (WT) and mutant lines in each time point analyzed; FW, fresh weight.

**Figure 3**



**Figure 3. Metabolite levels in *amircv* *Arabidopsis* mutants under extended darkness.** (A) Glucose, (B) sucrose, (C) fructose, (D) starch, (E) fumarate, (F) malate, (G) total protein and (H) total free amino acids. Values presented are means  $\pm$  SE of five biological replicates per genotype; an asterisk (\*) designate values that were determined by the Student's *t*-test to be significantly different ( $P < 0.05$ ) from the wild-type (WT).

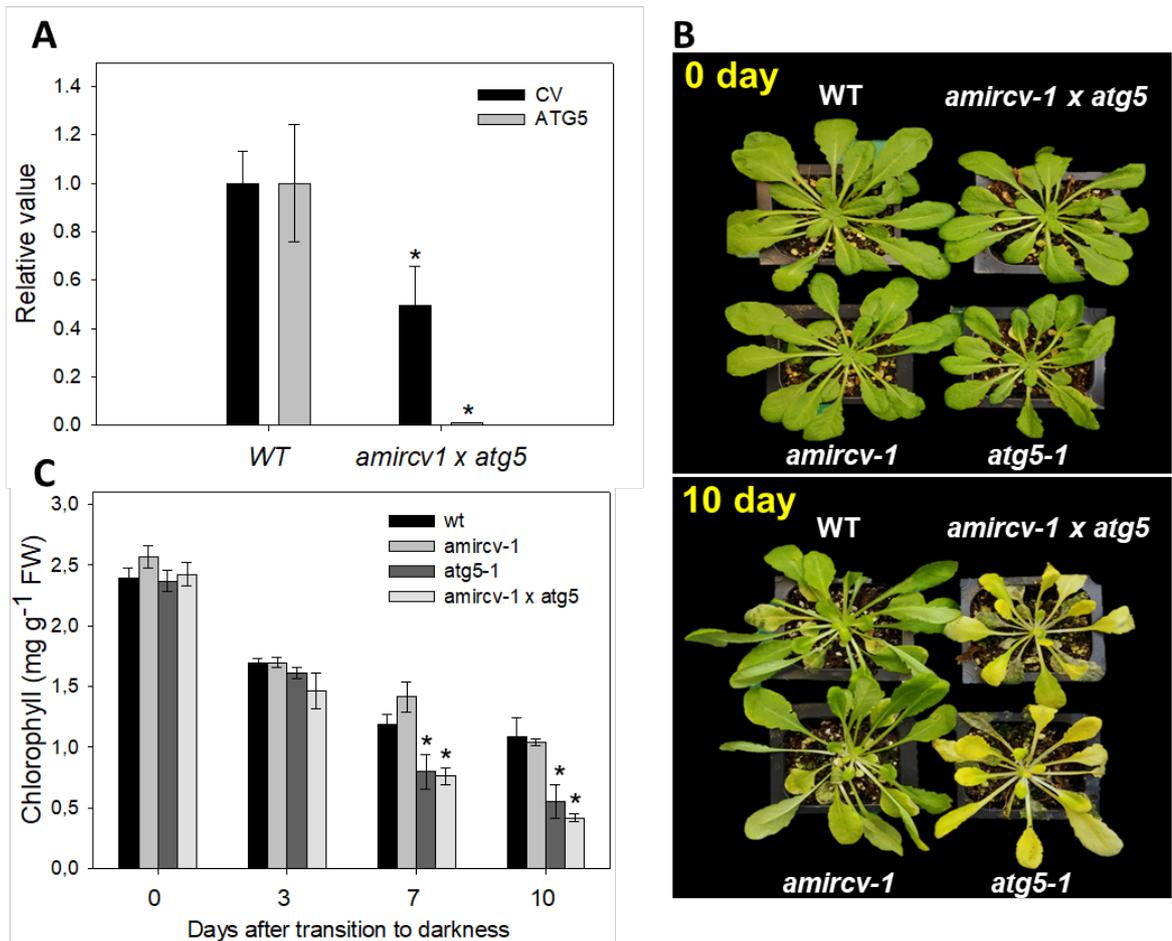
**Figure 4**



**Figure 4. Transcript levels of genes related to alternative pathways of respiration and autophagy in *amircv* Arabidopsis mutants.**

(A) Electron transfer flavoprotein/ ubiquinone oxireductase ETFQO; (B) Isovaleryl-CoA dehydrogenase- IVDH; (C) Lysine-ketoglutarate reductase/sacharopine dehydrogenase- LKR/SDH (D) Autophagy gene -ATG8h. The y-axis values represent the expression level relative to the wild-type (WT). Data were normalized with respect to the mean response calculated for the 0-d dark-treated leaves of the WT. Values presented are means  $\pm$  SE of at least three independent biological replicates.

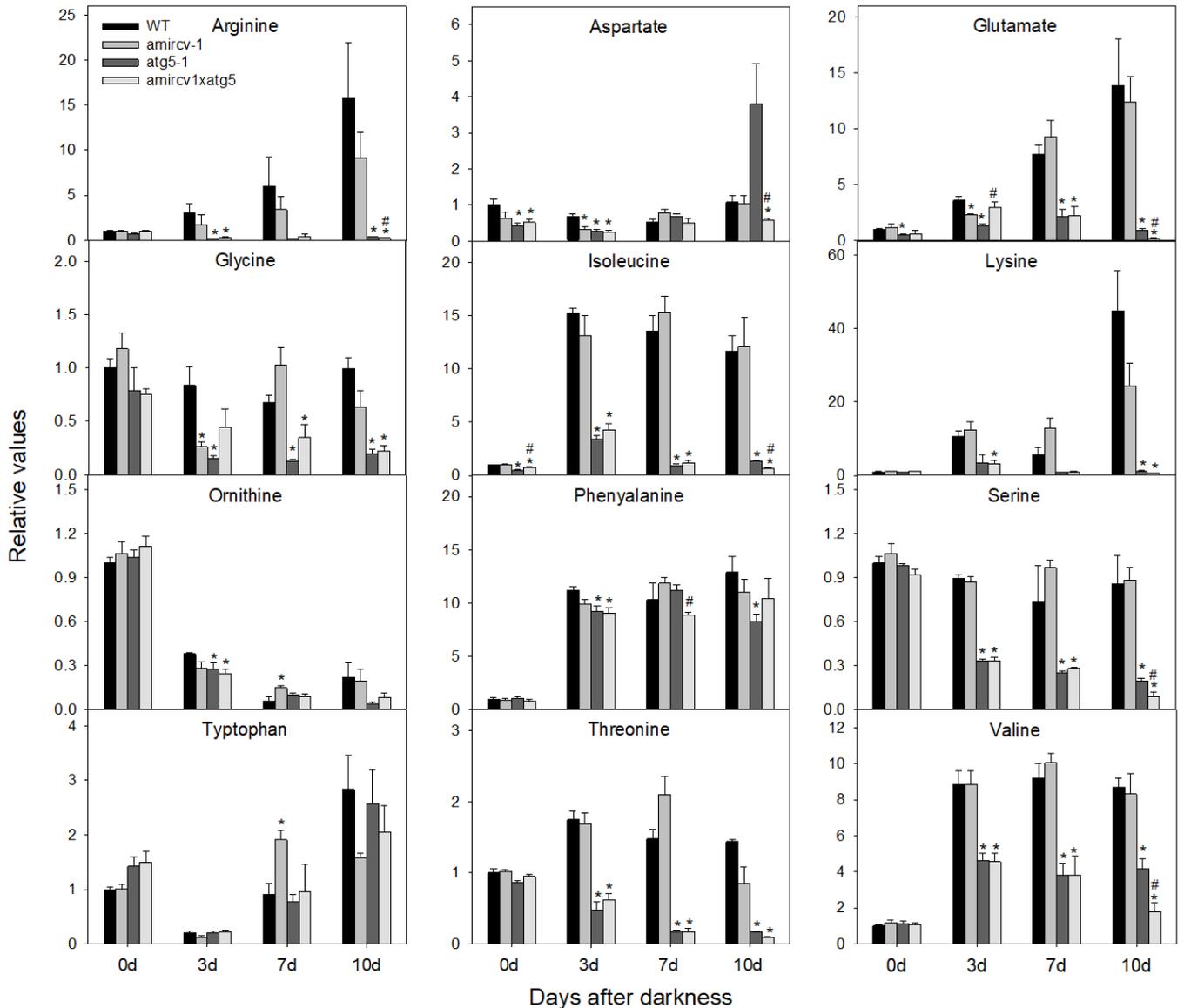
**Figure 5**



**Figure 5. Phenotype of Arabidopsis *amircv1xatg5* mutants under extended darkness.**

(A) Confirmation of low expression of *CV* and *ATG5* genes by RT-qPCR *amircv1xatg5* plants. Values are means  $\pm$  SE of three biological replicates. An asterisk (\*) designate expression values that were determined by the Student's t-test to be significantly different ( $P < 0.05$ ) from wild-type (WT) for each gene analyzed (B) Representative images of 4-week-old, short-day-grown Arabidopsis plants immediately (0 d) and after further treatment for 10 days in darkness conditions. (C) Chlorophyll content of leaves of 4-week-old, short-day-grown. Values presented are means  $\pm$  SE of five biological replicates. an asterisk (\*) designate values that were determined by the Student's t-test to be significantly different ( $P < 0.05$ ) from WT each time point. FW, fresh weight.

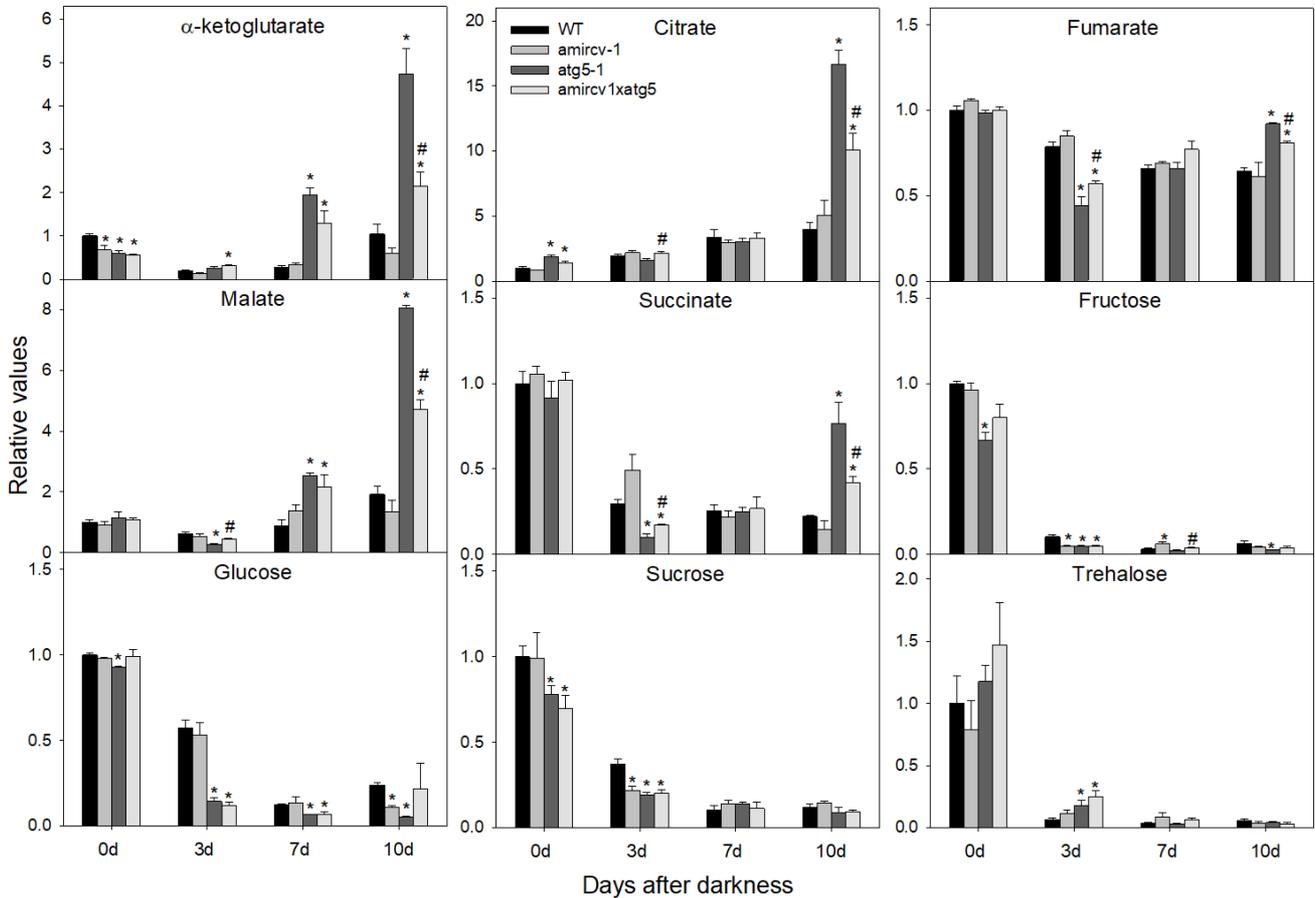
**Figure 6**



**Figure 6. Effects of both CV and autophagy mutation on amino acids levels during extended darkness conditions.**

Metabolite profile of *Arabidopsis amircv1xatg5*, *atg5*, *amircv-1* and wild-type (WT) genotypes during extended dark conditions. Data were normalized to the mean response calculated for the 0-d dark treated leaves of the WT. Values presented are means  $\pm$  SE of four biological replicates per genotype; an asterisk (\*) designate values that were determined by the Student's *t*-test to be significantly different ( $P < 0.05$ ) from WT each time point. The hash (#) designate *amircv1xatg5* values that were determined by the Student's *t*-test to be significantly different ( $P < 0.05$ ) from *atg5* each time point.

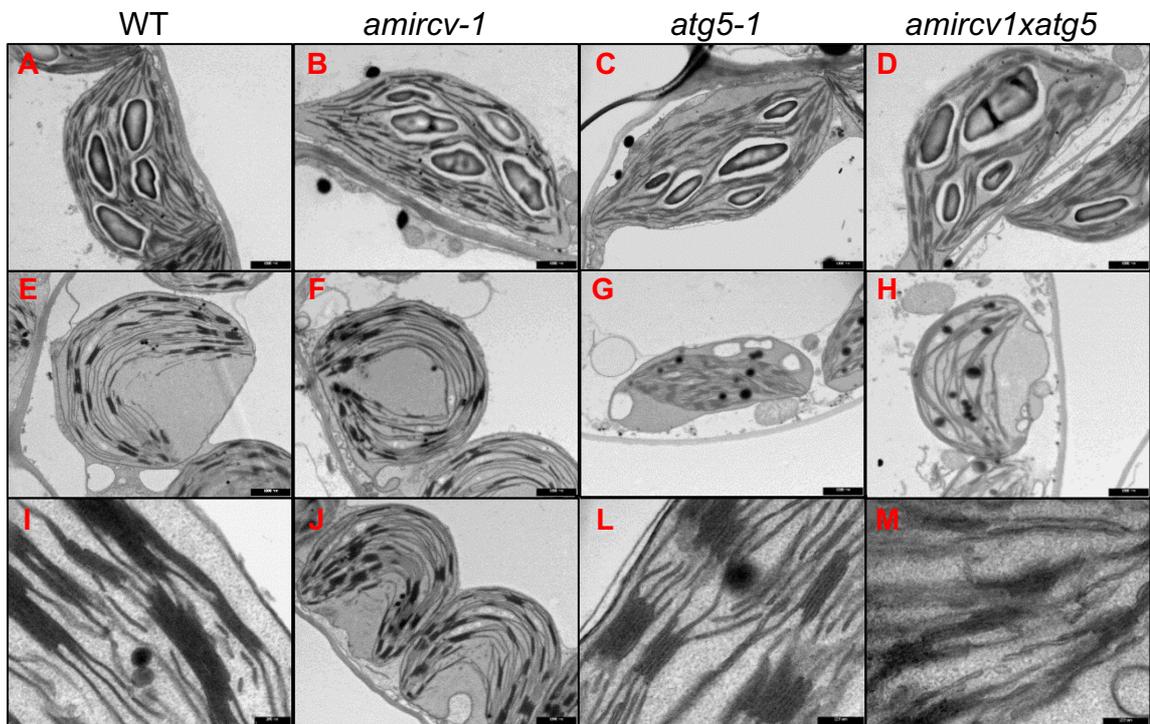
**Figure 7**



**Figure 7. Effects of both CV and autophagy mutation on organic acids levels during extended darkness conditions.**

Metabolite profile of Arabidopsis *amircv1xatg5 atg5*, *amircv-1* and wild-type (WT) genotypes during extended dark conditions. Data were normalized to the mean response calculated for the 0-d dark treated leaves of the WT. Values presented are means  $\pm$  SE of four biological replicates per genotype; an asterisk (\*) designate values that were determined by the Student's *t*-test to be significantly different ( $P < 0.05$ ) from WT each time point. The hash (#) designate *amircv1xatg5* values that were determined by the Student's *t*-test to be significantly different ( $P < 0.05$ ) from *atg5* each time point.

**Figure 8**



**Figure 8. Abnormal chloroplast accumulation of *atg5-1* and *amircv1 x atg5* mutants.**

Transmission electron micrographs of leaves of wild-type (WT), *amircv-1*, *atg5-1* and *amircv1xatg5* plants immediately (0d ) and after 7 days of darkness (E-M). Scale bar = 1 μm in images A-H and J; Scale bar = 0.2 μm in images I,L,M.