

**Figure S1** Alignment of the amino acid sequences of PhPH1 and LcPH1 (A), PhPH5 and LcPH5 (B)

******Figure S2** Phylogenetic relationships of LcPH1 and LcPH5 with homolog proteins from other species (Sequences are from Li Y, Provenzano S, Bliek M, et al. Evolution of tonoplast P-ATPase transporters involved in vacuolar acidification[J]. New Phytologist, 2016, 211(3):1092-1107.).



**Figure S3** Total flavonoid contents of leaf and petal in wild types and LcMYB5 over-expressed tobacco lines.

**Table S1.** Primers used for real-time PCR

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Forward primer  (5' to 3') | | Reverse primer  (5'to 3') |
| *LcMYB5* | | CGGTAACAGATGGTCTTTGAT | TGTAGTAGAAGGCGGTGGTG |
| *LcACTIN* | | ACCGTATGAGCAAGGAAATCACTG | TCGTCGTACTCACCCTTTGAAATC |
| *LcGAPDH* | | GATACAGTTCCCGTGTTGTTGAC | CATAAAGACACATAACACCACACTC |
| *LcbHLH1* | | CGAAGCCTGTTTGCTCTG | ATTCATCACCTCCATCCTGA |
| *LcPH1* | | CAAATCAAAGACAGCGAGGA | TTATTGCCAGGGAGAGTGAA |
| *LcPH5* | | CAAAGGAGACAGGCAGACGA | TCAGGGAATACACCAGCAAA |
| *PhPH1* | | AGTCCAATATTCAATGTGGTTATC | TCAGTT CTCGACCCTCCATC |
| *PhPH3* | | GTTTAATGCAGGTACTATGACAGGA | CATCTTTGTCAAGTACTTCACTAGT |
| *PhPH5* | | tagcaatcctaaatgatggcact | caactatcaggtcttggagatgg |
| *PhDFR* | | ACCTATGGATTTCGAGTCCAAAGA | CACATGATTCAATGATGCTTAGCAT |
| *PhAN1* | | CTTCCAATCCCACCACATTT | TCGTCCTCCTCATCCTCATC |
| *PhSAND* | | CTTACGACGAGTTCAGATGCC | TAAGTCCTCAACACGCATGC |

**Table S2.** Primers used in protein interaction experiments

|  |  |  |
| --- | --- | --- |
| Name | Sequences (5＇-3＇) | Function |
| LcMYB5-GFP\_F | CAAATTCGCGACCGGTATGAGGAACCCAACACCATC | Fusion GFP |
| LcMYB5-GFP\_R | TGCTAGCCATACCGGTTGCATGGTGACGATCCGTAG |
| LcMYB5-BD\_F | CATGGAGGCCGAATTCATGAGGAACCCAACACCATCTT | Yest two hybrid |
| LcMYB5-BD\_R | GCAGGTCGACGGATCCTTATGCATGGTGACGATCCG |
| N-LcMYB5-BD\_R | GCAGGTCGACGGATCCTTACAAAGGTTTGTGTGTTCTCG |
| C-LcMYB5-BD\_F | CATGGAGGCCGAATTCATGAACCCACCACCGCCTT |
| LcMYB5-NYFP\_F | CAAATTCGCGACCGGTATGAGGAACCCAACACCATC | BiFC |
| LcMYB5-NYFP\_R | TGCTCACCATACCGGTTGCATGGTGACGATCCGTAG |