Overexpression of snapdragon *Delila* (*Del*) gene in tobacco enhances anthocyanin accumulation and abiotic stress tolerance

Aung Htay Naing and Chang Kil Kim
Kyungpook National University, South Korea

Roses (*Rosa*) and Del (*Delila*) co-expression controls anthocyanin accumulation in snapdragon flowers, while their overexpression in tomato strongly induces anthocyanin accumulation. However, little data exist on how Del expression alone influences anthocyanin accumulation. In *Nicotiana tabacum* (*Xanthi*), Del expression enhanced leaf and flower anthocyanin production through regulating *NtCHS*, *NtCHI*, *NtF3H*, *NtDFR*, and *NtANS* transcript levels. Transgenic lines displayed different anthocyanin colors (e.g., pale red: *T*<sub>0</sub>-P, red: *T*<sub>0</sub>-R, and strong red: *T*<sub>0</sub>-S), resulting from varying levels of biosynthetic gene transcripts. Under salt stress, the T2 generation had higher total polyphenol content, radical (DPPH, ABTS) scavenging activities, antioxidant-related gene expression, as well as overall greater salt and drought tolerance than wild type. We propose that Del overexpression elevates transcript levels of anthocyanin biosynthetic and antioxidant-related genes, leading to enhanced anthocyanin production and antioxidant activity. The resultant increase of anthocyanin and antioxidant activity improves abiotic stress tolerance.

Biography

Aung Htay Naing has completed his PhD from Kyungpook National University, South Korea. He has published more than 30 papers in SCI/E in journals and has been serving as an Editorial Board Member of some plant science journals.

aunghtaynaing2005@gmail.com

Notes: