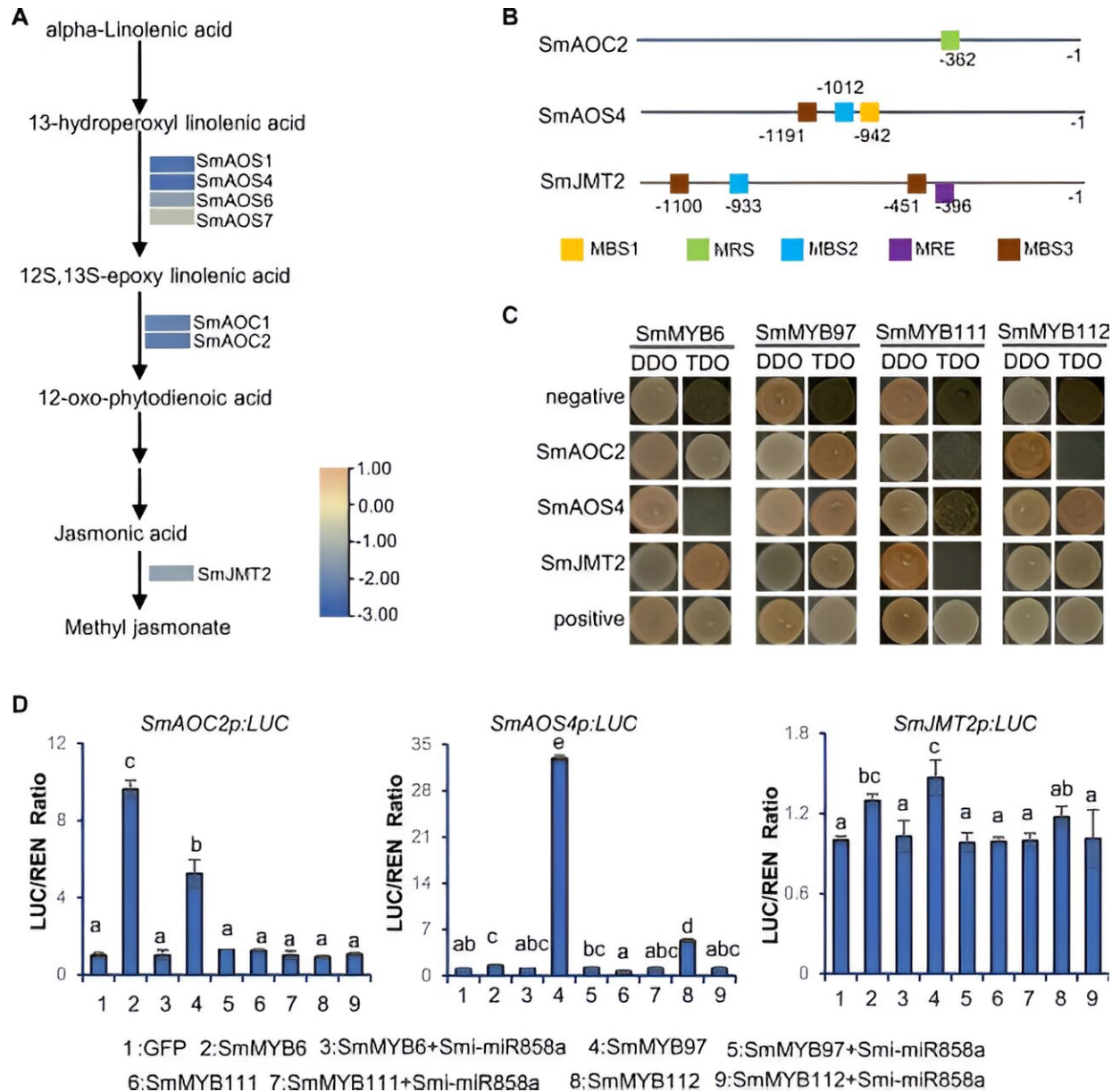


Decoding *Salvia miltiorrhiza*: A molecular approach to boosting bioactive compounds

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Binding of SmMYBs to MeJA biosynthesis-related genes. Credit: *Horticulture Research* (2024). DOI: 10.1093/hr/uhae047

A study, [published in Horticulture Research](#) explores the role of the Smi-miR858a-SmMYB module in regulating the biosynthesis of tanshinones and phenolic acids. Researchers from the Institute of Medicinal Plant

Development and Chengdu Medical College contributed to the research.

The researchers discovered that overexpression of Smi-miR858a in *Salvia miltiorrhiza* leads to significant reductions in tanshinone and phenolic acid levels. This miRNA targets and cleaves the transcripts of multiple MYB transcription factors, including SmMYB6, SmMYB97, SmMYB111, and SmMYB112. These MYBs are known to activate genes involved in the biosynthesis pathways of these bioactive compounds.

Additionally, Smi-miR858a affects the biosynthesis of methyl jasmonate, an important elicitor of secondary metabolism in plants. The study used computational predictions, degradome analysis, RNA-seq, yeast one-hybrid assays, and transient transcriptional activity assays to validate these findings. The dual regulatory pathways revealed by this research offer promising strategies for enhancing the production of medicinal compounds in Danshen through [genetic manipulation](#).

Dr. Shanfa Lu, the corresponding author of the study, commented, "Our findings elucidate a novel function of miR858 in regulating the biosynthesis of crucial bioactive compounds in *Salvia miltiorrhiza*. Understanding these regulatory mechanisms opens up new possibilities for improving the quality of Danshen through targeted genetic interventions, which could significantly benefit [traditional medicine](#) and modern pharmaceuticals."

The study's findings could transform [medicinal plant](#) breeding, enabling targeted enhancement of bioactive compounds in *Salvia miltiorrhiza*. This advancement may not only augment the plant's therapeutic potency but also inform strategies for improving other medicinal crops. The potential for optimizing plant-based treatments is a significant step

forward in the quest for more effective and sustainable pharmaceuticals.

More information: Butuo Zhu et al, The Smi-miR858a-SmMYB module regulates tanshinone and phenolic acid biosynthesis in *Salvia miltiorrhiza*, *Horticulture Research* (2024). [DOI: 10.1093/hr/uhae047](https://doi.org/10.1093/hr/uhae047)

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