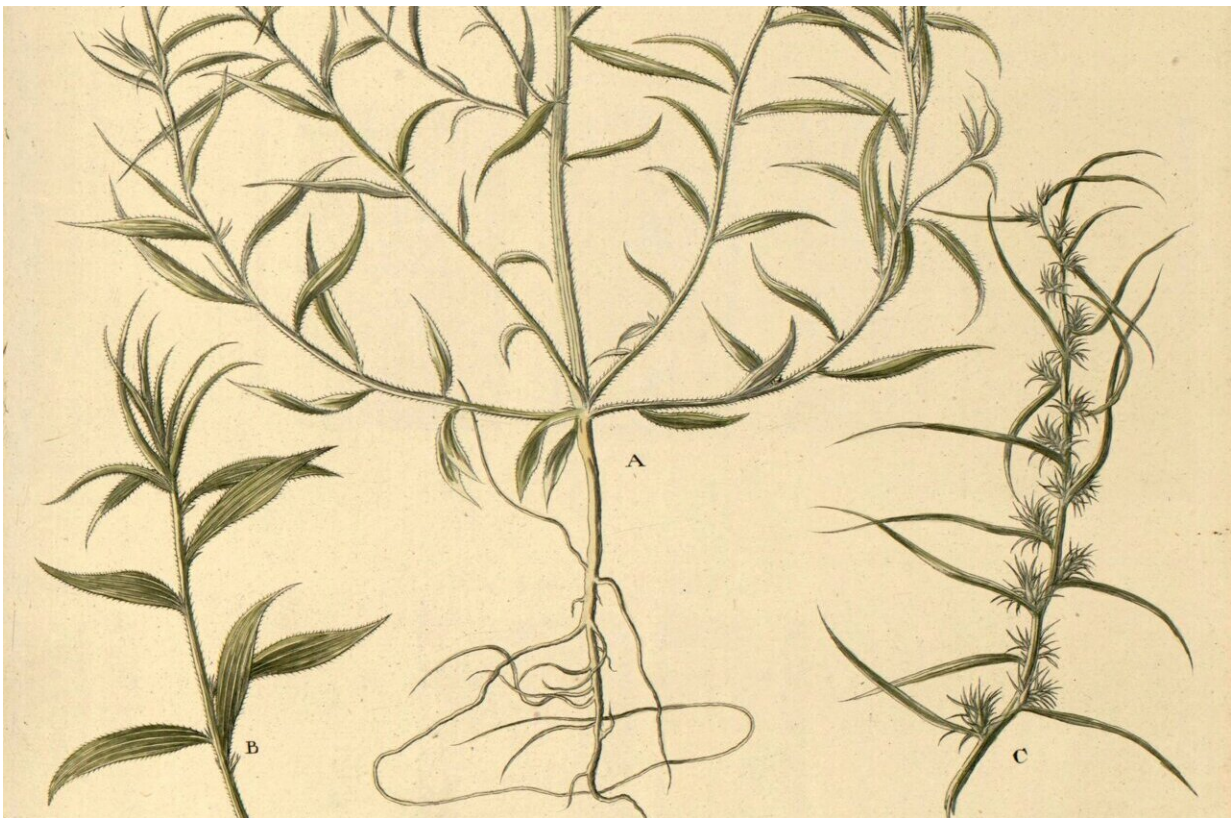


Researchers identify molecular mechanism of terpenoid biosynthesis in sand rice

June 1 2021, by Zhang Nannan



Corispermum squarrosum L. = *Agriophyllum squarrosum* (L.) Moq., from Pallas, P.S., *Flora rossica*, vol. 1(2): p. 113, t. 99 (1788) [K.F. Knappe] Bibliothèque de l'Université de Strasbourg, France
http://plantillustrations.org/illustration.php?id_illustration=171049

As a pioneer plant of the mobile and semi-mobile sand dunes in arid and

semi-arid region, *Agriophyllum squarrosum*, also called "sand rice", is a folk Mongolian medicine with pleiotropic pharmacological and ecological economic importance endemic to Asian temperature deserts.

As a representative edible and medicinal resource plant in the extreme regions, sand rice has the potential to be developed as a renewable non-[model plant](#) for studying terpenoid production. However, the molecular mechanism of terpenoids biosynthesis still remains far from clear in this medicinal herb.

In a study published in *Plant Biotechnology Reports*, researchers from the Northwest Institute of Eco-Environment and Resources (NIEER) of the Chinese Academy of Sciences (CAS) employed comparative transcriptome across different tissues in sand rice to identify putative functional genes and profile their expression patterns and further elucidate the potential pathways underlying terpenoid biosynthesis.

The researchers conducted a comparative transcriptome analysis of different tissues in sand rice to identify 84 unigenes encoding key enzymes in the upstream backbone biosynthesis and 53 unigenes encoding the downstream enzymes for terpenoid diversification.

With the other representative species from Amaranthaceae and *Arabidopsis*, the researchers also constructed phylogenetic relationships of key gene families involved in terpenoids biosynthesis and clarified their functional diversification.

Besides, considering the habitat characteristics of sand rice, they proposed that the enrichment of terpenoids and the functional diversification of terpenoids biosynthesis enzymes were more or less involved into its adaptation to stressful environments of desert.

This study will provide [genetic information](#) to illuminate further

molecular mechanism of [terpenoid](#) biosynthesis in [sand rice](#) and other Amaranthaceae species, which will promote pharmacological applications and serve a foundation for local evolution and ecology researches of this folk medicinal herb.

More information: Xiaoyue Yin et al, Comparative transcriptome analysis to identify genes involved in terpenoid biosynthesis in *Agriophyllum squarrosum*, a folk medicinal herb native to Asian temperature deserts, *Plant Biotechnology Reports* (2021). [DOI: 10.1007/s11816-021-00674-5](#)

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