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Structure–function relationship of terpenoid glycosyltransferases from plants

作者: 文章来源: 点击数: 289 更新日期: 2021-09-08

Title

Structure–function relationship of terpenoid glycosyltransferases from plants

Authors

Elisabeth Kurze, Matthias Wüst, Jieren Liao, Kate McGraphery, Thomas Hoffmann, Chuankui Song * and Wilfried Schwab*

Journal

Natural Product Reports

DOI

10.1039/d1np00038a

Abstract

Terpenoids are physiologically active substances that are of great importance to humans. Their physicochemical properties are modified by glycosylation, in terms of polarity, volatility, solubility and reactivity, and their bioactivities are altered accordingly. Significant scientific progress has been made in the functional study of glycosylated terpenes and numerous plant enzymes involved in regio- and enantioselective glycosylation have been characterized, a reaction that remains chemically challenging. Crucial clues to the mechanism of terpenoid glycosylation were recently provided by the first crystal structures of a diterpene glycosyltransferase UGT76G1. Here, we review biochemically characterized terpenoid glycosyltransferases, compare their functions and primary structures, discuss their acceptor and donor substrate tolerance and product specificity, and elaborate features of the 3D structures of the first terpenoid glycosyltransferases from plants.

