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Synthesis of Natural Products Using Engineered Plants and Microorganisms

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Plants and microorganisms, particularly medicinal herbs, harbor a diverse array of natural products. Many of these are bioactive molecules with potential applications in pharmaceuticals and healthcare. However, the concentrations of these bioactive compounds in plants or microorganisms are usually low. The advancement of omics technologies and synthetic biology has opened up new possibilities for producing these bioactive molecules through the metabolic engineering of plants and microorganisms. Especially substances like artemisinin, rare ginsenosides, and several other natural products have already been successfully manufactured on a large scale. This reprint aims to provide an overview of the current state-of-the-art synthetic biology and engineering biology technologies used in plants and microorganisms for the biosynthesis and scalable production of natural products.

