

Medicinal Plant Biotechnology for Yield Improvement of Bioactive Secondary Products

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Abstract

Plant secondary products are mostly small molecules made by the pathways of plant secondary metabolism. This group of compounds has long been economically important as drugs, flavor and fragrances, dye and pigments, pesticides, and food additives. Many of them cannot be produced on an industrial scale by chemical synthesis owing to their structural complexity, and extraction from plants is often not feasible as the plants can be rare or slow growing. Plant cell cultures provide a viable system for the production of these compounds in laboratories, but its application in industry is still limited due to frequently low yields of the metabolites of interest or the feasibility of the bioprocess. Recent strategies for increasing productivity and quality have been proposed to use the approaches of pathway engineering, culture technologies and fast-track breeding. These approaches are now being used to successfully achieve possible high levels of value-added secondary products. This presentation will cover these applications and recent advancement for the production of some important bioactive small molecules and pharmaceuticals from medicinal plants.

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