EXPLORATION ON PHOTOSYNTHETIC ORGANISMS FOR PRODUCTION OF NATURAL DRUGS.

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Abstract

Advancements in biotechnology have ushered in sustainable practices for the production of medicinal drugs. In the past, these drugs were primarily extracted from plants and animals, processes that were both unsustainable and led to feedstock competition, despite relatively high recovery rates. Our studies have delved into the potential of novel, sustainable hosts for producing natural medicinal drugs by modifying biosynthesis pathways. We harnessed the power of thermophilic cyanobacteria to produce flavonoids by introducing multiple flavonoid biosynthesis genes from plants into the cyanobacterial genome. This approach presents a sustainable solution for generating natural flavonoids without competing with existing feedstock sources and minimizing biomass waste. Additionally, we explored the biosynthesis of anti-malaria drugs using perennial plants, enhanced by an endophytic bacterial consortium isolated from Cinchona plants. Our findings suggest that fast-growing perennial plants can provide a high yield of anti-malaria drugs, potentially replacing the slow-growing Cinchona plant as a valuable source.