Engineering yeast metabolism for production of terpenoids for use as perfume ingredients, pharmaceuticals and biofuels

Terpenoids represent a large class of natural products with significant commercial applications. These chemicals are currently mainly obtained through extraction from plants and microbes or through chemical synthesis. However, these sources often face challenges of unsustainability and low productivity. In order to address these issues, Escherichia coli and yeast have been metabolic engineered to produce non-native terpenoids. With recent reports of engineering yeast metabolism to produce several terpenoids at high yields, it has become possible to establish commercial yeast production of terpenoids that find applications as perfume ingredients, pharmaceuticals and advanced biofuels. In this review, we describe the strategies to rewire the yeast pathway for terpenoid biosynthesis. Recent advances will be discussed together with challenges and perspectives of yeast as a cell factory to produce different terpenoids.

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