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Bioengineering of yeast cell for biodiesel production

Priya Kumari and **Naseem A Gaur**
DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi

Due to increased oil demand, depleting fossil fuels and greenhouse gas emissions, biofuels production are getting much attention. The fatty acid based biofuels (fatty acids ethyl ester/biodiesel, fatty alcohol, etc.) produced from microbial cells have emerged as ideal alternatives to fossil oils, with significant pluses over plant, animal and algae oils. *Saccharomyces cerevisiae* is a most studied industrial model microorganism and also its fatty acid production ability has been increased by metabolic engineering approach. But still the cost of the process limits its industrial production therefore, more research is required. Here, we are addressing this issue by sequential metabolic engineering approach. In order to synthesize biodiesel in yeast cells, we integrated wax ester synthase (WS2) gene from *Marinobacter hydrocarbonoclasticus* into its genome. The genetic engineering approaches have focused on high-level biodiesel production by rewiring metabolism pathways to upsurge carbon flux towards fatty acid CoA synthesis, by increasing the cofactor supply, and disrupting the degradation pathway.

e: priya7654@gmail.com