



BCIL Biotech Consortium India Limited

Increased biodiesel and β -carotene production in *Rhodotorula pacifica* INDKK in an integrated biorefinery framework

TECHNOLOGY AVAILABLE FOR TRANSFER

UNMET NEED AND OPPORTUNITY

By the end of 2024, the predicted global market value for β -carotene is estimated to reach USD 583 million, accounting for >90% of the entire revenue of a standard industrial biofuel plant. Hence, combining the production of carotenoids along with biodiesel is expected to make a feasible and profitable process for an agricultural country like India. Hence, oleaginous yeasts have emerged as the most preferred microbial host in a bio-refinery model for producing biodiesel with multiple additional value-added compounds, thereby achieving the eminence as a key substitute to other industrial microorganisms.

UNIQUE SELLING PROPOSITION

- The maximum 11.8 g/L lipid titer, 210.4 mg/L β -carotene and 7.1 g animal feed were produced by *R. pacifica* INDKK.
- Xylooligosaccharides (XOS) (20.4 g/L) production from hemicellulosic fraction may considerably influence the economy of the biodiesel production process.

TECHNOLOGY

The present study justifies *Rhodotorula pacifica* as a potential superior host for a yeast-based bio-refinery model, primarily due to its capability to propagate at high rates on sugarcane industry waste (molasses and sugarcane bagasse hydrolysate) and producing enhanced lipid titer, β -carotene, and animal feed than synthetic media. Moreover, XOS produced from waste hemicellulosic fraction of bagasse can further minimize the biodiesel production cost.

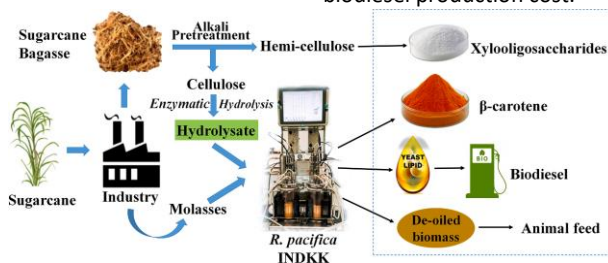


Figure: The present bio-refinery approach signifies an outstanding green substitute to biofuels and other value-added commodity production.

STAGE OF DEVELOPMENT

Technology currently at laboratory scale or ready for scaled up as per the industry requirement.

LICENSING OPPORTUNITY

BCIL is looking for suitable industrial partner for commercialization of this technology

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