**RETASTE Conference Abstracts**
RETASTE-FWU-1352-In-person Oral
Rethymno, September 16-18, 2026
© Author(s) 2026 CC BY 4.0 License
DOI:10.5281/zenodo.23678257

# Recovery of B-Carotene Crystal Using Green Solvent from Rhodotorulla Glutinis Isolated from Vegetable Waste

Debarati Paul

*Applied Phycology and Biotechnology Division; CSIR- Central Salt and Marine Chemicals Research Institute; Bhavnagar - 364002, Gujarat, India*

## Abstract

β-carotene is a promising compound due to its provitamin A activity, antioxidant properties, and wide applications in food, pharmaceutical, and cosmetic industries. Rhodotorula glutinis is used as an alternative for β-carotene production due to its rapid growth, high carotenoid yield, and ability to utilize low-cost substrates. This present study involved optimization and validation of the β-carotene recovery by using green solvents produced through microbial synthesis using novel strain of Rhodotorulla glutinis. The Rhodotorulla glutinis was isolated from Sabji Mandi Waste and was utilised for the production of β-carotene. Different molar concentrations of Ionic Liquid-based solvent and Deep Eutectic Solvent systems derived from Choline-based components were used for the extraction of carotenoid compounds. These solvents were chosen based on their low volatility, biodegradability, customisable physical and chemical properties, and enhanced ability to split up hydrogen bonding networks inside microbial cell walls. The extraction process involved treating dried yeast biomass with selected solvent systems under controlled conditions, and the recovery was followed by solid-liquid and liquid-liquid phase separation using organic solvents. The purity through Spectrophotometer, HPLC, FTIR, and NMR analysis. Finally, the crystallised product was recovered. The results demonstrated that the diluent Deep Eutectic solvent (105 dilution 20 ml) (Choline Chloride: Glycolic Acid- 1:4) was more efficient in extracting a higher percentage of crude β-carotenoid (71.4%) recovery of the total biomass (0.5 gm) compared to the highly concentrated solvents (29.16% and 32.76% respectively) and also compared to the ioniq liquid solvents (31% and 23%). Therefore, the present study stated that the combination of Choline chloride and Glycolic acid could be more efficient for the successful extraction of this carotenoid β-carotene, as it is cheaper than choline bicarbonate. The product was recovered in a crystallised form, which may be used further as a raw material, as a colourant or antioxidant material for the development of natural products for human health.

**Keywords:** Rhodotorulla glutinis, Green Solvent, DES, Beta-Carotene, Crystals

ACCEPTED