TECHNOLOGY FOR SCALE-UP STUDIES & DEMONSTRATION

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A sustainable way of extracting R-Phycoerythrin from seaweeds using bio-refinery

This technology includes new extraction and separation method for R-Phycoerythrin (R-PE) from Phycobiliproteins present in red macroalgae. Good's Buffer Ionic Liquids are used for maintaining the structural and chemical integrity of the highly sensitive R-Phycoerythrin. CSIR-CSMCRI is looking for collaborative studies/industrial partners for scale-up studies and demonstration.

CONVENTIONAL VS BIOREFINERY METHOD

Multistep & Tedious		Single Step & Easier
Lesser Product Quality of R-PE (5.6)		Maximum Purity of R-PE (6.21)
Time Consuming	OR	Reduced Time
High Energy Demand		High Energy Demand
Less Economic		Cost Efficient

TRL 3

Good's Buffer IL method
Pink Colour

R-PC absent

R-PC present

Conventional method
Violet Colour

Patent
IN 202211053614

Applications

R-Phycoerythrin is widely used as fluorescent marker and as an analytical reagent. It can be easily cross-linked with the blood antibodies and other proteins using molecular tagging technique without compromising the florescence properties making is useful for diagnosis. These fluorescent pigments due to their distinct spectroscopic, optical and biological activities, have earned high commercial value in various sectors such as pharmaceuticals, energy industries (luminescent solar concentrators), food industries, cosmetics, biomedical research and for fluorescent- based detection systems.

R-PE is a photosynthetic pigment can be extracted from both micro and some macroalgae has great biotechnological potential due to their intense color, fluorescent properties and potential health benefits. R-PE is desirable as it is non-toxic to humans and have been used as photosensitizers for treating tumors, thus a potential replacement of Photofrin (purified product from animal blood).