Title:	Microbial electrosynthesis from carbon dioxide feedstock linked to yeast growth for the production of high-value isoprenoids
Authors:	Yadav, Ravineet (/jspui/browse?type=author&value=Yadav%2C+Ravineet) Chattopadhyay, Banani (/jspui/browse?type=author&value=Chattopadhyay%2C+Banani) Kiran, Rashmi (/jspui/browse?type=author&value=Kiran%2C+Rashmi) Yadav, Ankit (/jspui/browse?type=author&value=Yadav%2C+Ankit) Bachhawat, Anand K (/jspui/browse?type=author&value=Bachhawat%2C+Anand+K) Patil, Sunil A (/jspui/browse?type=author&value=Patil%2C+Sunil+A)
Keywords:	Microbial electrosynthesis Yeast growth High-value isoprenoids
Issue Date:	2022
Publisher:	Elsevier
Citation:	Bioresource Technology, 363(1), 127906
Abstract:	The difficulty in producing multi-carbon and thus high-value chemicals from CO2 is one of the key challenges of microbial electrosynthesis (MES) and other CO2 utilization technologies. Here, we demonstrate a two-stage bioproduction approach to produce terpenoids (>C20) and yeast biomass from CO2 by linking MES and yeast cultivation approaches. In the first stage, CO2 (C1) is converted to acetate (C2) using Clostridium ljungdahlii via MES. The acetate is then directly used as the feedstock to produce sclareol (C20), β-carotene (C40), and yeast biomass using Saccharomyces cerevisiae in the second stage. With the unpurified acetate-containing (1.5 g/L) spent medium from MES reactors, S. cerevisiae produced 0.32 ± 0.04 mg/L β-carotene, 2.54 ± 0.91 mg/L sclareol, and 369.66 ± 41.67 mg/L biomass. The primary economic analysis suggests that sclareol and biomass production is feasible using recombinant S. cerevisiae and non-recombinant S. cerevisiae, respectively, directly from unpurified acetate-containing spent medium of MES.
Description:	Only IISER Mohali authors are available in the record.
URI:	https://doi.org/10.1016/j.biortech.2022.127906 (https://doi.org/10.1016/j.biortech.2022.127906) http://hdl.handle.net/123456789/4998 (http://hdl.handle.net/123456789/4998)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need To Add…Full Text_PDF. (/jspui/bitstream/123456789/4998/1/Need%20To%20Add%e2%80%a6Full%20Text_PDF.)		15.36 kB	Unknown	View/Open (/jspui/I

Show full item record (/jspui/handle/123456789/4998?mode=full)

(/jspui/handle/123456789/4998/statistics)