

POTENTIAL OF SUGAR BEET VINASSE AS A FEEDSTOCK FOR BIOCATALYST PRODUCTION WITHIN AN INTEGRATED BIOREFINERY CONTEXT

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ABSTRACT

BACKGROUND:

This work explores the feasibility of vinasse as an inexpensive feedstock for industrial biocatalyst production within the context of an integrated sugar beet biorefinery. As an exemplar, production of CV2025 ω -Transaminase (ω -TAm) in *Escherichia coli* BL21 was studied.

RESULTS:

Characterisation of vinasse showed that it comprised mainly of glycerol along with several reducing sugars, sugar alcohols, acetate, polyphenols and protein. Preliminary results showed *E. coli* BL21 cell growth and CV2025 ω -TAm production were feasible in cultures using 17 to 25% (v/v) vinasse with higher concentrations demonstrating inhibitory effects. The D-galactose present in vinasse facilitated auto-induction of the pQR801 plasmid enabling CV2025 ω -TAm expression without addition of

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