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# OPTIMIZING BIOBUTANOL PRODUCTION: ANALYSIS OF FEEDSTOCK SELECTION, PRE-TREATMENT METHODS, AND MICROORGANISM STRAINS FOR BIOBUTANOL PRODUCTION FROM AGRICULTURAL AND INDUSTRIAL BY-PRODUCTS

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**Abstract** – This study presents an analysis of key elements of biobutanol production, including feedstock selection, pre-treatment methods, and microorganism strains. Using laboratory experiments, we evaluated the ability of different microorganisms to convert various agricultural and industrial by-products into biobutanol. We tested three microorganism strains: *C. acetobutylicum* DSM 792, *C. beijerinckii* DSM 6423, and *C. saccharoperbutylacetonicum* DSM 14923. The results showed that biodiesel production residues, various agricultural hydrolysates, yeast residues, and milk processing residues were the most suitable feedstocks for biobutanol production. In addition, the authors explored different pre-treatment methods, such as microbial and chemical hydrolysis, to enhance the efficiency of biobutanol production. Our findings provide valuable insights for optimizing biobutanol production processes in line with sustainable and cost-effective production principles.

**Keywords** – Acetone-butanol-ethanol (ABE) fermentation; agricultural by-products; biobutanol; bioprocess optimization; chemical hydrolysis; feedstock, industrial by-products; microbial hydrolysis; pretreatment methods