



PROCESS FOR PRODUCING BIOETHANOL USING CHEESE WHEY AND CELLULOSIC BIOMASS

IITM Technology Available for Licensing

Problem Statement

- Biomass high in cellulose, hemicellulose and lignin are not readily digestible and are primarily utilized for wood and paper products, fuel, or are disposed of.
- Cheese whey is a common waste byproduct of dairy production which in surplus can endanger the physical and chemical structures of soil, decrease crop yields, and cause serious water pollution.
- Creating products from whey **reduces whey disposal costs for the dairy industry**, enabling their businesses to become more profitable.
- Thus, it is desirable to find inexpensive and environmentally-friendly alternatives for creating commercially desirable products from cheese whey.
- Also, a need exists for an improved process for producing bioethanol using cheese whey and cellulosic biomass.

Technology Category/ Market

Category - Green Technology, Biofuels

Applications - Bioethanol Production, Energy, Biofuels, Waste Management

Industry - Biofuels, Agriculture & Dairy Waste Management, Energy

Market - Bioethanol market size is estimated to be USD 83.4 B in 2023, and it is projected to reach USD 114.7 B by 2028 at a **CAGR of 6.6%**

Intellectual Property

- IITM IDF Ref. 1306
- IN 432544 - Patent Granted

TRL (Technology Readiness Level)

TRL – 3, Technology validated in lab.

Technology

- An improved process for producing bioethanol using cheese whey and cellulosic biomass.

Process

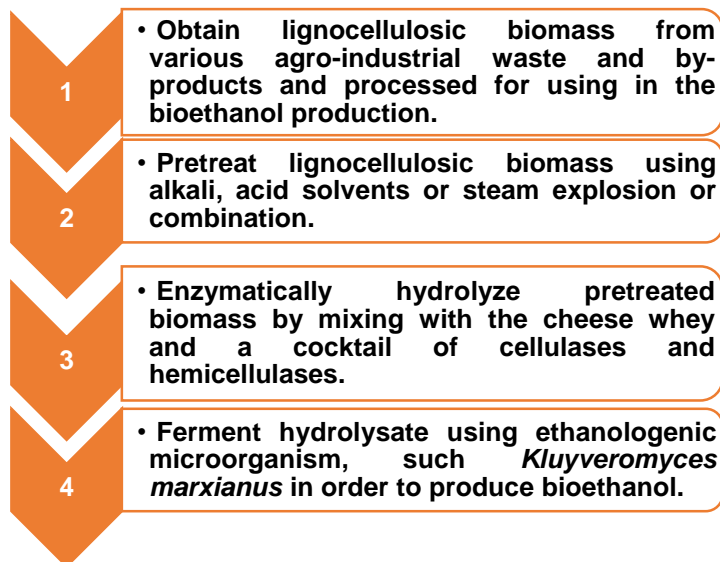


Fig. 1. Flowchart illustrates process for producing ethanol from cheese whey and lignocellulosic biomass.

Key Features / Value Proposition

- The primary industrial advantage is to **utilize cheese whey**, along with lignocellulosic substrates, which is a byproduct of agriculture industry for ethanol production.
- In addition **whey acts as a buffering solution**, and replace buffer which leads to low cost of enzymatic hydrolysis of lignocelluloses.
- This invention maximizes the use of low-cost, lignocellulosic biomass found in **agriculture and dairy industry waste** for effective production of ethanol at a low processing time.

Research Lab

Prof. Chandraraj Raj Krishnan,
Dept. of Biotechnology

CONTACT US

Dr. Dara Ajay, Head
Technology Transfer Office,
IPM Cell- IC&SR, IIT Madras

IITM TTO Website:
<https://ipm.icsr.in/ipm/>

Email: smipm-icsr@icsrpis.iitm.ac.in
sm-marketing@imail.iitm.ac.in

Phone: +91-44-2257 9756/ 9719