

BUTANOL “A SUPERIOR BIOFUEL” PRODUCTION FROM WHEAT STRAW HYDROLYSATE USING A MICROBIAL CULTURE

N. Qureshi

Fermentation Biotechnology Research, National Center for Agricultural Utilization
Research, ARS-USDA, 1815 N. University Street, Peoria, IL 61604, USA

Butanol is an important transportation fuel that has more energy content than ethanol. It can be used in existing gasoline supply and distribution lines, has higher octane number, and can be mixed with gasoline in any proportion. It is also a valuable chemical. Butanol can be produced from annual crops such as corn, rice, barley and other starchy crops. However, due to prohibitive cost of these grains and cereals, use of lignocellulosic residues is recommended. Microbial culture such as *Clostridium beijerinckii* P260 can utilize five and six carbon sugars present in cellulosic biomass and convert them to butanol. In order to reduce the cost of butanol production, we used wheat straw, and cutting edge technology to convert it (wheat straw) to butanol. Wheat straw was hydrolyzed to lignocellulosic component sugars (glucose, xylose, arabinose, galactose, and mannose) prior to their conversion to butanol. The rate of production of wheat straw hydrolysate to butanol was 214% that of when using glucose. Successful production of economically available butanol from wheat straw by fermentation will benefit farmers, butanol producing industry and the United States public. Development of such a fuel by economically viable process is essential as the gasoline prices are raising steadily. This technology utilizes agricultural residues such as wheat straw as compared to traditional technology which requires use of glucose or starch for bioconversion to biofuels such as butanol.

Contact: Nasib Qureshi, Fermentation Biotechnology Research, NCAUR-ARS-USDA, 1815 N. University Street, Peoria, IL 61604, USA. Tel: 309-681-6318. E-mail: Nasib.Qureshi@ars.usda.gov.