

Ethanol from concentrated broth

Balázs Lemmer¹, Zoltán Jákói¹, Doroca Erdeg¹, Sándor Beszédes¹, Gábor Keszthelyi-Szabó¹,
Cecilia Hodúr¹

¹University of Szeged, H-6720 Szeged, Dugonics square 13.

hodur@mk.u-szeged.hu

Second generation bioethanol processing based on food and agricultural wastes have many advantages: e.g. low price of the raw-materials and the huge quantity of them. Several pre-treatment processes are known to increase the efficiency of enzymatic hydrolysis of cellulose. One of the promising pre-treatment methods is the microwave irradiation which has been becomes a focus area of researches in the last years.

In our experiments different types of pre-purified and concentrated broths from enzymatic hydrolysis of experimental tobacco were used. The difference between broth was the pre-treatment of the raw-material (e.g. microwave or conventional heating with alkaline or acidic treatment).

Automatic laboratory grade stirred fermenters with capacity of 2L were used for baker's yeast ethanol production. The pH was maintained at a constant value of 5 by sodium-hydroxide and hydrogen-chloride or sulfuric acid. Temperature was set to a constant 45°C.

Results revealed that sugars from hydrolysis of experimental tobacco can be effectively converted to bioethanol, but the optimal pre-treatment parameters of the saccharification and the fermentation are different. Positive effect of microwave pre-treatment was proven compared to conventional heating.

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