

Identification and enzymatic detoxification of phenolic compounds in lignocellulosic hydrolysates

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Increased attention has been focused on alcoholic liquid fuels, such as ethanol and butanol, prepared from lignocellulosics as an alternative to fossil fuels. Lignocellulosic materials provide abundant and renewable resources and have great potential as a substrate for fermentation. Lignocellulosic hydrolysates, however, contain not only fermentable sugars but also some compounds that inhibit microbial fermentation to desirable products, such as furan, weak acids, and various phenolic compounds. Therefore, detoxification of hydrolysates, i.e., removal of inhibitory compounds is necessary before the fermentation for achieving high yield of products.

In the present study, we identified phenolic compounds and investigated the enzymatic detoxification of phenolic compounds found in lignocellulosic hydrolysates. The enzyme reaction was optimized as a function of external variables, such as pH, enzyme dose, and hydrogen peroxide to substrate ratio.