

Fungal Fermentation of Biorefinery Feedstocks

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Today, significant portion of energy and raw materials used in chemical industry is derived from petroleum. In Korea, about 40% of petroleum is consumed in chemical industry sector. Furthermore, its impact on environment is also significant and CO₂ emission from chemical industry accounts for over 20% of total emission. Therefore, advanced chemical processes are of urgent need, which consume less energy and fossil resources, emit less greenhouse gases and wastes, and are competitive with conventional processes as well. Fungi are natural producers of various valuable chemicals. Although most of the academic and industrial interests have been focused on their ability to produce useful secondary metabolites, they also have potential as remarkable producers of commodity chemicals like organic acids. In this presentation, our research efforts to develop a fungal bioprocess converting renewable resources into C₄/C₅ chemical feedstocks will be introduced. Topics will cover improvement of fungal biocatalysts, control over catalyst physiology, optimization of fermentation, and development of effective product recovery and purification process.