

## **Production of fatty acids and fatty acid-esters for usage as biodiesel by yeasts from sugars, glycerol and lignocellulose**

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### **Abstract**

The following technology being developed by us deals with synthesis and extracellular secretion of fatty acids and their esters for the production and use as biodiesel. During dual phase anaerobic fermentation, yeasts release large amounts of medium-chain fatty acids into the medium while growing on variety of substrates like Glucose, xylose, lignocellulose and Glycerol. Esters of these fatty-acids are chemically equivalent to Biodiesel and have ability to substitute petroleum based fuels completely or partially without having to change the existing infrastructure. Various genetically engineered yeast strains and growth conditions were tested for extracellular fatty acid production and secretion and comparative study was performed. The time-dependent study on fatty acid release showed that the chances of extracted higher proportion of shorter and medium chain fatty acids are higher immediately after the onset of anaerobicity in the multiphase batch fermentation. The yeast strains with Lipid metabolic pathway engineered for higher flux were found to be more efficient at extracellular release of fatty acids while growing on above mentioned substrates.