

Effect of tryptone, peptone, sodium sulfide addition on syngas fermentation with *Clostridium autoethanogenum*

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In recent years, the excessive use of fossil fuels has caused serious climate change problems such as global warming, and biorefining technologies for producing bioenergy and biocompounds have been attracting attention as an alternative to cope with such climate change. Biorefinery is known as a technology for producing biofuels and biochemicals from biomass using microbial catalysts. The use of gaseous substrates (such as industrial waste gases and synthesis gas) for the biofuel production has some advantages: the reduction of the atmospheric greenhouse effect and economical procedure. Anaerobic acetogenic bacteria such as *Clostridium autoethanogenum* and *Clostridium ljungdahlii* can convert synthesis gas composed of CO, CO₂, and H₂ to ethanol and acetic acid.

In this study, we used *Clostridium autoethanogenum* as biocatalyst for conversion from synthesis gas to bioethanol. And we investigated the effect of nitrogen source such as tryptone, peptone and Na₂S·9H₂O on growth and product formation. We concentrate to evaluate ethanol productivity, acetic acid productivity, and ethanol to acetic acid ratio according to individual factor of medium.