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**Biogas Production from Brewery Spent Grain Enhanced by Bioaugmentation
with Hydrolytic Anaerobic Bacteria**

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Abstract

Lignocellulosic substrates are widely available but not easily applied in biogas
production due to their poor anaerobic degradation. The effect of bioaugmentation by
anaerobic hydrolytic bacteria on biogas production was determined by the biochemical
methane potential assay. Microbial biomass from full scale upflow anaerobic sludge
blanket reactor treating brewery wastewater was a source of active microorganisms
and brewery spent grain a model lignocellulosic substrate. *Ruminococcus flavefaciens*
007C, *Pseudobutyrvibrio xylanivorans* Mz5^T, *Fibrobacter succinogenes* S85 and
Clostridium cellulovorans as pure and mixed cultures were used to enhance the
lignocellulose degradation and elevate the biogas production. *P. xylanivorans* Mz5^T
was the most successful in elevating methane production (+ 17.8 %), followed by the
coculture of *P. xylanivorans* Mz5^T and *F. succinogenes* S85 (+ 6.9 %) and the

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