## ABSTRACT

## CHARACTERISTICS OF TOFU WASTEWATER WITH THE ADDITION OF TOFU DREGS AND CASSAVA DREGS MIXTURE TO INCREASE BIOGAS PRODUCTION

**By**

**KUKUT MILLYAN RIZKI**

Tofu wastewater still contained high levels of organic matter, thus it had to be treated to reduce pollution. The use of tofu wastewater to produce biogas was very potential, however to fulfill the energy requirement of tofu industry, additional organic matter was needed. This study aimed to determine the best characteristics of a mixture of tofu dregs and cassava dregs additional to tofu wastewater as raw material for biogas production, as well as to determine the potential of biogas production and biogas increasing percentage. The research method was a descriptive method. This research used the treatment concentrations of tofu dregs and cassava dregs mixtures by adding 0%, 1%, 3%, and 5%, as well as retention time treatments of 0, 1, 2, and 3 days. The results showed that the optimal characteristics included a pH value of 3.90, total volatile acid (TVA) of 3,576 mg/L, total solids (TS) of 1.73%, total suspended solids (TSS) of 31.65%, and soluble chemical oxygen demand (S-COD) of 31,464.8 mg/L, which were obtained from the addition of a 5% mixture of tofu dregs and cassava dregs with a retention time of 3 days. The biogas production potential obtained was 296.43 $Nm^3$/ton of soybeans, with a 238.43% increase compared to the control treatment. The research results indicated that the addition of a 5% mixture of tofu dregs and cassava dregs was potential for increasing biogas production.



**Keywords**: tofu wastewater, tofu dregs, cassava dregs, biogas production

# ABSTRAK

## KARAKTERISTIK AIR LIMBAH TAHU DENGAN PENAMBAHAN CAMPURAN AMPAS TAHU DAN ONGGOK SEBAGAI UPAYA PENINGKATAN PRODUKSI BIOGAS

**Oleh**

**KUKUT MILLYAN RIZKI**

Air limbah tahu masih mengandung bahan organik yang tinggi sehingga harus diolah untuk mengurangi dampak pencemaran. Pemanfaatan air limbah tahu menjadi biogas sangat potensial untuk dilakukan, namun untuk memenuhi kebutuhan energi di industri tahu diperlukan bahan organik tambahan dari luar industri tahu. Penelitian ini bertujuan untuk mengetahui karakteristik terbaik dari penambahan campuran ampas tahu dan onggok pada air limbah tahu sebagai bahan baku produksi biogas, serta mengetahui potensi produksi biogas dan persentase peningkatan biogas. Metode penelitian yang digunakan adalah metode deskriptif. Penelitian ini menggunakan perlakuan konsentrasi campuran ampas tahu dan onggok sebesar 0%, 1%, 3%, dan 5% , serta perlakuan waktu tinggal 0, 1, 2, dan 3 hari. Hasil penelitian menunjukkan bahwa karakteristik terbaik meliputi nilai pH 3,90, *total volatile acid* (TVA) 3.576 mg/L, *total solid* (TS) 1,73% , *total suspended solid* (TSS) 31,65%, dan *soluble oxygen demand* (S-COD) sebesar 31.464,8 mg/L diperoleh dari penambahan campuran ampas tahu dan onggok 5% dengan waktu tinggal 3 hari. Potensi produksi biogas yang diperoleh sebesar 296,43 $Nm^3$/ton kedelai dengan persentase peningkatan sebesar 238,43% dibandingkan perlakuan kontrol. Hasil penelitian menunjukan bahwa penambahan campuran ampas tahu dan onggok 5% sangat berpotensi terhadap peningkatan produksi biogas.

**Kata kunci**: air limbah tahu, ampas tahu, onggok tapioka, produksi biogas