**Bioenergy Production from Anaerobic Co-Digestion of Sewage Sludge and Abattoir Wastes**


## Abstract

Energy is the pillar of human economic development. Several energy sources, renewable and nonrenewable, have been exploited to assure and sustain the need for sustainable development. However, depletion of non-renewable energy sources forced researchers to search for alternative cost effective and environmental friendly energy sources. Thus, conversion of waste materials into energy has obtained considerable attention. In line with this, the aim of this study is to investigate the improvement of bio-energy production through anaerobic digestion of mixture of wastes from sewage sludge and abattoir sources. The abattoir waste is functioned as a co-substrate. Laboratory scale batch anaerobic co-digestion of the waste is carried out under mesophilic condition for 20 days. Sewage Sludge (SS) alone and different mix ratios of SS to Abattoir Waste (AW) were analyzed for bioenergy production. Besides, the nutrient values and reduction in volume of the sewage after digestion were determined. The results show that methane productions of 33.8%, 48.3% and 56.9% were obtained for SS alone and for SS: AW mix ratios of 4:1 and 3:2, respectively. The nutrient values of the slurry increased as mix ratio decreased due to the increase for AW. The obtained results indicate that bio-energy production can be improved through co-digestion of SS using AW as a co-substrate; thus warranting further investigation for the practical application in the energy production.



**Keywords**: Bio-Energy, Anaerobic Co-Digestion, Abattoir Wastes, Sewage Sludge