

**Laboratory Scale Experiments for Biogas Production from Cassava Tubers**Wantanee Anunputtikul<sup>1</sup> and Sureelak Rodtong<sup>2,\*</sup><sup>1</sup> School of Biology, Institute of Science, Suranaree University of Technology, Nakhon Ratchasima, Thailand<sup>2</sup> School of Microbiology, Institute of Science, Suranaree University of Technology, Nakhon Ratchasima, Thailand

**Abstract:** The production of biogas, an alternative source of energy, from starch-rich tubers of cassava plant, was investigated in the laboratory scale using the simple single-state digesters of 5- and 20-liter working volumes. The digesters were fed on a batch basis with the slurry of dry cassava tuber containing the average moisture content of 18%, and operated at ambient temperature (29-31°C) for 30 days. When operating the single-state digester of 5-liter working volume fed with the optimal concentrations of carbon and nitrogen sources, 1.00% (w/v) total solids and 0.04% (w/v) urea, the gas yield of 1.95 liters/day containing the maximum methane content of 67.92% was achieved at 10-day retention time. The fermentation reactions were ceased after 16-day operation. The fermentation volume was then scaled up to 20 liters. The gas yield of 5.50 liters/day containing 55.70% methane was obtained at 10-day retention time. Whereas the methane content of 67.57% and the gas yield of 3.88 liters/day were obtained at 14-day retention time. The fermentation reactions were ceased after 24-day operation. Biogas containing 67% methane content could be achieved from the digestion of cassava tubers using simple single-state digesters.

**Keywords:** Biogas, Cassava, Cassava Tuber, Methane, Single-state Digester.