

Raw material resource for biodegradable plastic production from cafeteria wastes

Abstract :

This study presents treatment performance of cafeteria waste and polyhydroxyalkanoate (PHA) production in two stage process through an up-flow anaerobic sludge bed (UASB) and sequencing batch reactor (SBR). COD removal efficiency was found as follows: SBR, 93; and UASB - SBR, 95.4%. In addition, 30% ammoniacal nitrogen (AN) was noted at high aerobic condition and phosphate (PO_4) removal efficiency increased at high anoxic conditions. Volatile fatty acid (VFA) intermediates such as acetic acid increased from 505 up to 4315 $mg.l^{-1}$ in effluent of UASB reactor and successfully consumed in SBR for PHA production. Acetic acid concentration was reduced significantly in SBR from 4315 to 50 $mg.l^{-1}$. During this period, PHA production was increased to 68% over cell dried weight, confirming effectiveness of sequential UASB-SBR system in producing bioplastic from cafeteria waste.