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## 17 $\beta$ -ESTRADIOL DEGRADING BACTERIA IN SEQUENCING BATCH REACTORS FOR SWINE WASTEWATER TREATMENT

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### Abstract

Two 17 $\beta$ -Estradiol (E<sub>2</sub>) degrading strains were isolated from the activated sludge of swine wastewater bio-treatment aerobic facility and affiliated to *Bacillus subtilis* based on 16S rRNA gene sequencing. The degradation rates were more than 90–95% at 37 °C in 4 days when E<sub>2</sub> was the sole carbon source. Steady and effective nutrients and estrogen removals were achieved in three parallel sequencing batch reactors (SBRs) treating real swine wastewater for 90 days, which contributed to the existence of the representatives from genera *Brevibacterium*, *Bacillus*, *Nitrobacter* and *Methylophilus*. However, the *Bacillus subtilis*-like strain was present in a greater abundance in Run A and Run B, as extra 10 mg/L and 1 mg/L E<sub>2</sub> was added, to reveal its distribution contributed to process estrogen removal.

**Key words:** *Bacillus subtilis*, degradation bacteria, SBR, swine wastewater, 17 $\beta$ -Estradiol

Received: March, 2016; Revised final: September, 2016; Accepted: October, 2016

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