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Assessment of anaerobic bacterial diversity and its effects on anaerobic system stability and the occurrence of resistance genes during the treatment of pharmaceutical wastewater

Sevcan Aydin, Bahar Ince, Orhan Ince

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1 **Assessment of anaerobic bacterial diversity and its effects on anaerobic system**
2 **stability and the occurrence of resistance genes during the treatment of**
3 **pharmaceutical wastewater**

4 Sevcan Aydin*, Bahar Ince** and Orhan Ince*

5 * Istanbul Technical University, Environmental Engineering Department, Maslak, Istanbul, Turkey

6 ** Bogazici University, Institute of Environmental Sciences, Bebek, Istanbul, Turkey

7

8 **Corresponding author**

9 Sevcan AYDIN

10 Address: Catalan Institute for Water Research (ICRA), Science and Technology Park of the
11 University of Girona, H₂O Building, Girona, Spain

12 Tel: +90 5057927480

13 E-mail address: seaydin@itu.edu.tr

14

15 **Abstract**

16 This study evaluated the link between anaerobic bacterial diversity and, the biodegradation
17 of antibiotic combinations and assessed how amending antibiotic combination and increasing
18 concentration of antibiotics in a stepwise fashion influences the development of resistance
19 genes in anaerobic reactors. The biodegradation, sorption and occurrence of the known
20 antibiotic resistance genes (ARGs) of erythromycin and tetracycline were investigated using
21 the processes of UV-HPLC and qPCR analysis respectively. Ion Torrent sequencing was
22 used to detect microbial community changes in response to the addition of antibiotics. The
23 overall results indicated that changes in the structure of a microbial community lead to
24 changes in biodegradation capacity, sorption of antibiotics combinations and occurrence of

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