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Shifts in bacterial community composition and abundance of nitrifiers during aerobic granulation in two nitrifying sequencing batch reactors

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Abstract

Shifts in bacterial community composition and abundance of nitrifiers during aerobic granulation, and the effects of wastewater composition on them were investigated using Illumina sequencing and quantitative PCR. The bacterial diversity decreased sharply during the post-granulation period. Although cultivated with different wastewater types, aerobic granular sludge (AGS) formed with similar bacterial structure. The bacterial structure in AGS was completely different from that of seed sludge. The minor genera in seed sludge, e.g., *Arcobacter*, *Aeromonas*, *Flavobacterium* and *Acinetobacter*, became the dominant genera in AGS. These genera have the potential to secrete excess extracellular polymer substances. Whereas, the dominant genera in seed sludge were found in less amount or even disappeared in AGS. During aerobic granulation, ammonia-oxidizing archaea were gradually washed-out. While, ammonia-oxidizing bacteria, complete ammonia oxidizers and nitrite-oxidizing bacteria

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