New Insights into Pharmaceutical-Degrading Microorganisms from Anaerobic Biodegradation of Pharmaceutical Substances

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Abstract

existing work aimed to perceive anaerobic microorganisms with the capability to put of pharmaceutical merchandise (PhPs) belonging to these two instructions (ciprofoxacin, 17β-estradiol and sulfamethoxazole) underneath distinctive

17β-estradiol-degrading community. In sulfate-reducing stipulations the neighbourhood used to be more often than not bioremediation of PhP and novel PhP-degrading bacteria.

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and environmental regulatory agencies. In light of these concerns, it has become imperative to explore innovative and sustainable approaches for the removal and mitigation of pharmaceutical contaminants from natural systems. One such approach that has gained increasing prominence in recent years is anaerobic biodegradation [3].

Anaerobic biodegradation is a microbiological process that takes place in oxygen-deprived environments and is characterized by the utilization of organic compounds by diverse communities of microorganisms. ese microorganisms have evolved unique metabolic pathways and enzymatic capabilities to break down complex organic molecules into simpler and less harmful forms. While anaerobic biodegradation has been widely studied for its role in the degradation of various organic pollutants, its application in the context of pharmaceutical degradation represents a relatively nascent

insights gained from this research is the remarkable diversity of microorganisms engaged in anaerobic pharmaceutical degradation.

Microbial communities in anaerobic environments are highly adaptable, encompassing a wide range of taxonomic groups, including bacteria and archaea. e identi cation of speci c genera, such as Clostridium, Desulfovibrio, and Methanogen archaea, highlights the dynamic and versatile nature of these microorganisms in the face of pharmaceutical contaminants. As we strive to address the complex challenges posed by pharmaceutical contamination, these insights pave the way for the development of sustainable and e ective strategies that prioritize environmental protection and human health. By continuing to advance our understanding of anaerobic biodegradation, we move closer to a future where pharmaceutical pollution is managed with the utmost e ciency and care, ensuring the preservation of our precious ecosystems for generations to come.

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