

嗜酸产甲烷菌及其在厌氧处理中的应用

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Acidophilic methanogens and their applications in anaerobic digestion.

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摘要

产甲烷菌在自然界碳素循环过程中发挥着重要作用.酸性泥炭沼泽环境中存在着多种未知的产甲烷古菌,其中嗜酸产甲烷菌因其特殊的生长代谢特征近年来引起学者的广泛关注.若将嗜酸产甲烷菌应用于高浓度有机废物或废水的厌氧消化过程中,可从本质上克服因酸积累造成的产甲烷抑制,减少运行成本,扩展厌氧消化处理技术的应用范围.本文综述了嗜酸产甲烷菌的富集分离培养方法、生理生化特性、代谢特征及相关分子生物学研究等内容,并对其在厌氧处理中的应用前景进行了分析和展望,提出了未来研究的方向.

关键词: [酸积累](#) [嗜酸产甲烷菌](#) [生理生化特性](#) [厌氧处理](#)

Abstract:

Methanogens play an important role in global carbon cycle. There exists a range of unknown methanogenic archaea in acidic peat lands, among which, acidophilic methanogens have attracted increasing research interests because of their special metabolic characteristics. To introduce acidophilic methanogens in the anaerobic digestion process of high concentration organic wastes or waste water could essentially overcome the inhibition of acid accumulation on the methanogens and help reduce the operation cost, broadening the industrial application of anaerobic bio-treatment technology. In this paper, we reviewed the recent researches on acidophilic methanogens, with the focus on enrichment and isolation methods, physiological and biochemical characters, metabolic characteristics, and application of molecular biology. The potential applications of acidophilic methanogens in anaerobic digestion process were analyzed and proposed, and the directions for further researches were suggested.

Key words: [acid accumulation](#) [acidophilic methanogen](#) [physiological and biochemical characters](#) [anaerobic digestion](#)

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