عنوان مقاله:

A review of the classification and characteristics of methanogenic archaea

محل انتشار:

اولین همایش منطقه ای دستاوردهای نوین و پژوهشهای دانش بنیان در میکروبیولوژی و بیوتکنولوژی (سال: 1401)

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خلاصه مقاله:

Methanogenic microorganisms that belong to the prokaryote kingdom and the archaea kingdom areknown as the largest and most diverse group in this kingdom. Some of the most important of them belongto the order Methanomicrobiales, Methanosarcinales, Methanocellales, and Methanobacteriales.Numerous studies show that due to the age and great diversity of archaea, methanogenesis is known asone of the oldest and most specialized anaerobic metabolisms on Earth, which probably played a majorrole in the evolution of Earth's atmosphere. Methanogenic microorganisms have been found in manyanoxic (anaerobic) habitats, including Sialine or hydrothermal lakes, Antarctic frozen soils, freshwatersediments, and very saline lakes. They can also be isolated from acidic swamps, anaerobic wetlands,alkaline lake sediments, and rice fields. In addition, methanogens are also present in the digestive systemof humans and other organisms, especially in the rumen of ruminants, and they are the onlymicroorganisms that produce methane as a final product under hypoxia conditions and carry out themechanism of methanogenesis. Therefore, methanogenic archaea are known as obligate methaneproducers that can only grow in the presence of this gas. Researchers believe that these archaea can play asignificant role in controlling the climate around the world due to the release of a large amount ofmethane in the atmosphere. They also have an important contribution to waste treatment, biogasproduction, electricity production, fuel, etc. Considering the importance of methanogenic archaea, thepurpose of this review article is to investigate their evolutionary origin, classification, uniquecharacteristics, and their application

کلمات کلیدی:

Characteristics, Classification, Mechanism of methanogenesis, Methanogenic archaea