Journal of Biochemistry and Physiology

Commentary A SCITECHNOL JOURNAL

Methane Oxidizing Bacteria Combating Climate Change

Bachin Devin*

Department of Ecoscience and Arctic Research Centre, Aarhus University, Aarhus, Denmark

***Corresponding author:** Bachin Devin, Department of Ecoscience and Arctic Research Centre, Aarhus University, Aarhus, Denmark; E-mail: bachindevin@gmail.com

Received date: 20-Feb-2023, Manuscript No. JBPY-23-95827;

Editor assigned date: 22-Feb-2023, PreQC No. JBPY-23-95827 (PQ);

Reviewed date: 09-Mar-2023, QC No JBPY-23-95827;

Revised date: 16-Mar-2023, Manuscript No. JBPY-23-95827 (R);

Published date: 23-Mar-2023, DOI: 10.4172/jbpy.1000130

Description

The release of greenhouse gases such as methane into the atmosphere is a significant contributor to climate change. Climate change is a pressing global challenge that has far-reaching consequences for our planet. Methane a potent greenhouse gas is responsible for approximately 16% of global warming since the pre-industrial era. Finding effective ways to mitigate methane emissions is crucial in the fight against climate change. Among the various approaches methane oxidizing bacteria have emerged as combating climate change by playing a vital role in methane removal from the atmosphere.

Methane oxidizing bacteria also known as methanotrophs are a diverse group of microorganisms that have the unique ability to consume methane as their primary source of energy. They are found in a wide range of environments including natural ecosystems, wetlands, soil, sediments, and the digestive systems of animals. Methanotrophs are aerobic bacteria, meaning they require oxygen to survive and function. They possess specialized enzymes called Methane Monooxygenases (MMOs) that allow them to convert methane into methanol, which can then be used as a carbon source for their growth and reproduction. This process, known as methane oxidation or methanotrophy, effectively removes methane from the atmosphere, reducing its warming potential.

One of the main ways methanotrophs contribute to methane mitigation is through their role in natural methane sinks. Natural methane sinks are ecosystems or environments that actively remove methane from the atmosphere, thereby reducing its concentration. Wetlands, such as peatlands, swamps, and marshes, are known to be significant natural methane sinks. Methanotrophs play an important role in these environments by oxidizing methane which is released during anaerobic decomposition of organic matter, before it reaches the atmosphere. This prevents methane from being released into the air and helps reduce its warming potential. Moreover, methanotrophs also play a significant role in agricultural ecosystems. Methane emissions from agriculture are a significant contributor to global methane emissions, accounting for approximately 40% of the total emissions. Livestock production, in particular, is a major source of methane emissions, as ruminant animals such as cows and sheep produce methane during their digestive processes. Methanotrophs in the rumen of these animals help to oxidize the methane produced, thereby reducing its emission into the atmosphere. This demonstrates the potential of methanotrophs in mitigating methane emissions from agriculture, an essential sector for global food production.

Apart from their role in natural and agricultural ecosystems, methanotrophs are also being explored for their potential in bioengineering and biotechnology applications. Methane is a vast and largely untapped resource, and converting it into valuable products using methanotrophs could provide sustainable solutions for various industries. For example, methanotrophs can be engineered to produce biodegradable plastics, biofuels, and other valuable chemicals. This not only reduces methane emissions but also provides an alternative to fossil-based products, contributing to a more sustainable and circular economy. Furthermore, methanotrophs have been studied for their potential in bioremediation. Methane is a potent greenhouse gas that is also a common air pollutant in many industrial settings, such as landfills, wastewater treatment plants, and oil and gas facilities. These facilities are significant sources of methane emissions, and controlling methane emissions from these sources is dangerous in the fight against climate change. Methanotrophs can be used in bioremediation processes to oxidize methane emitted from these sources, thereby reducing their environmental impact.

Citation: *Devin B (2023) Methane Oxidizing Bacteria Combating Climate Chang. J Biochem Physiol 6:1.*