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Short Communication

Anaerobic Ammonium Oxidation – A Major Key Process in Waste Water Treatment

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Nitrite is an important part of biological nitrogen cycle. The microorganisms involved in the nitrification are known from the lithotrophic ammonia and nitrite oxidant heterotrophic bacteria and nitrifiers. Lithotrophic nitrifiers are placed throughout the family of Nitrobacteraceae, although they may not be phylogenetically related. Chemotactotropic nitrification bacteria have been found in many ecosystems such as freshwater, brine, drainage systems, soil and on/in stones and masonry techniques. Suboptimal growth conditions could be possible with ureolytic activity, aggregate formation or biofilms regions on platforms. Nitrates are found in extreme habitats at high temperatures and in Antarctica. Although the optimal pH for cell growth is from 7.4 to 7.88, pH environments of about 4 values are often found, such as acid tea and forestry and pH values of about 10, such as soda water. It should be noted that aerobic nitrifiers have also been found anoxic environments. Ammonia oxidants can be denitrified with ammonia as an electron donor under limited oxygen conditions or with hydrogen or organic compounds under anoxic conditions. Finally, they can use N_2O_4 a an oxidant to oxidize ammonia under the branches and anoxia con ditions. Also new anaerobic group Nitrite-dependent ammonia oxidants have been found. Several new microbial pathways have beei found in the nitrogen cycle. Bacteria of the planktonic tissue tha make ammonia and nitrite as anoxic conditions and informatioı on the metabolism of aerobic nitrifiers increases the new opportunities of the nitrogen cycle. These two groups can even be organi partners in ecosystems with limited oxygen consumption. In thesc conditions, aerobic ammonia oxidants are able to oxidize ammonia to nitrite that is consumed with anammox bacteria and ammonia. Products cooperation mainly in N_2 and small quantities nitrate is noticeable. When ammonia is limiting a substrate for the groups of both ammonia oxidants can be decisive as a result of competition. However, we are not far from understanding nitrogen conversion in detail. Get a deeper perspective in the future studies may focus on the regulation of nitric metabolism, community interaction and phylogenetically diversity the nitrogen component of the microorganisms.

Anaerobic ammonium oxidation process, has tremendous economic benefit in the sector of biological sciences specifically in waste water engineering, has great potential in the treatment of sewage rich in ammonia, particularly after its success in the treatment of sludge digestion liquids. The extended start-up time of this process seriously limits its application, but this process can be improved by inoculation of pre-cooked anaerobic ammonium oxidation sludge, selecting reactors with efficient retention of biomass, adjusting the nutrition balance and environmental conditions. Currently, the anaerobic ammonium oxidation process is limited to some types of wastewater. A broad application is possible if biomass can be widely enriched and better adapted to organic matter. Some species of sea water, which are psychrophilic, can also be studied for application in cold regions [1-3].

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