T3-P1
FATTY ACID CHARACTERIZATION OF CYANOBACTERIAL STRAINS ISOLATED FROM VELA LAKE AND MONDEGO RIVER RICE FIELDS (CENTRAL-WESTERN, PORTUGAL)


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It is known that particular groups of cyanobacteria are characterized by particular lipid patterns that can be used as their biological markers. The present study examined the fatty acid composition of nostococcean heterocystous cyanobacterial strains isolated from Central-western Portuguese freshwater shallow water bodies, namely Vela Lake and rice fields from Mondego River Basin. Morphological characterization showed that strains from Vela Lake belonged to Aphanizomenon gracile (strains UA6FA16 and UA6FA18), Anabaena flos-aquae (strain UA6FA15) and Anabaena cf. solitaris (strain UA6FA14) species, whereas rice field strains belonged to Anabaena cylindrica (strain UTAD_A212) and Nostoc muscorum (strain UTAD_N213). Generally, biochemical characterization inferred from lipid analysis showed that the predominant fatty acid methyl esters (FAMEs) in the lipids of the strains were palmitic, oleic and α-linolenic, with trace amounts of myristic and C18 polyunsaturated FAMES. Palmitic acid content in UA6FA16 was 2.4 and 2.6 times higher than in UTAD_A212 and UTAD_N213, respectively. Surprisingly, the two Aph. gracile strains had different FAME composition and the high concentration of myristic acid in UA6FA14 could be indicative of some hepatotoxicity. The comparison of quantitative and qualitative FAME composition of the strains isolated from the different habitats could explain the close chemotaxonomic relationship between the strains UTAD_A212 and UTAD_N213, both isolated from rice paddies. The same approach could be applied to the strains UA6FA14 and UA6FA18 isolated from the Vela Lake ecosystem. Principal component statistical analysis of variability of fatty acids belonging to the six genera is reported. To our knowledge, there is almost no information about lipid composition in freshwater cyanobacterial species living in different habitats in Portugal. Therefore, this limnological study is a contribution to our investigation on diazotrophic cyanobacteria in the framework of a comprehensive collaboration program concerning the taxonomy, phylogenetic relationships and toxicological effects of pesticides and other xenobiotics on freshwater cyanobacteria.

Key-words: cyanobacteria, fatty acids, principal component analysis, rice fields, Vela Lake.

T3-P2
CYANOBACTERIA DIVERSITY IN FURNAS THERMAL MATS, S. MIGUEL, AZORES

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Cyanobacteria are the first oxygenic photosynthetic living organisms on Earth. Their presence on Furnas’ hotspings thermal mats is easily visible due to the dark green coloration that the mats display. In addition, it is possible to observe the oxygen bubbles being released from these mats. These microorganisms are found mainly in thermal springs which temperatures are always below 60-65°C. Most thermal springs where Cyanobacteria are the mats dominant components have iron rich thermal fluids. Even though it is known that these Cyanobacteria dominated mats exist at Furnas grounds their Cyanobacteria diversity was never studied extensively. The present work consists on the first extensive Cyanobacteria diversity list for Furnas lower temperature hot springs. Temperature and pH were measured at the time of the biological sample collection. All samples were observed fresh, using optical microscopy. Several microphotographs were selected to characterize each biological sample. The Cyanobacteria were identified until the lowest taxonomic ranking possible by using traditional diagnostic taxonomic features.

Key-words: cyanobacteria, taxonomy, Azores, hotsprings, microbial communities.