DETECTION OF THE MICROVIRIN GENE IN THREE *Microcystis* STRAINS (CYANOBACTERIA) ISOLATED FROM THE TUCURUÍ HYDROELECTRIC POWER STATION RESERVOIR, PARÁ STATE, BRAZILIAN AMAZONIA

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Cyanobacteria, formerly known as blue-green algae, are photosynthetic prokaryotes found in terrestrial and aquatic ecosystems, including deserts, tropical rainforests and mangroves. This group presents an expressive biotechnological importance, producing a variety of secondary metabolites with antibacterial, antiviral, antifungal, antimalarial, antileishmaniasis, anticancer, among others activities. The genus *Microcystis* includes unicellular species and is a member of the order Chroococcales. The microvirin (MVN), a recently isolated lectin from *M. aeruginosa* PCC7806, shares 33% identity with the anti-HIV protein cyanovirin-N. MVN is able to inhibit infection by a wide variety of HIV-1 laboratory-adapted strains and clinical isolates, preventing both syncytium formation between HIV-1-infected T cells and uninfected $CD4^+$ T cells and DC-SIGN-mediated HIV-1 transmission to $CD4^+$ T cells. In view of the biotechnological potential of cyanobacteria and the anti-HIV activity of microvirin, the aims of this study were to isolate and identify *Microcystis* strains of eastern Amazonia and detect the presence of the *mvn* gene in the isolated strains. The isolation of the strains from the Tucuruí reservoir, Pará state, occurred through three types of strategies: micromanipulation, serial dilution and plating. The identification of the isolates was performed by sequencing of the 16S rRNA gene, using primers CYA106F and CYA781R, and subsequent comparison to sequences deposited in the GenBank at the National Center for Biotechnology Information (NCBI) using the Basic Local Aligment Search Tool (BLAST). The detection of the *mvn* gene in the isolates was determined by polymerase chain reaction (PCR) - using the primers mvn-F and mvn-R, and subsequent sequencing of these amplicons and comparison to sequences in GenBank using the BLAST tool. Three strains were isolated and identified as *Microcystis* sp CACIAM03, CACIAM04 and CACIAM08 (Coleção Amazônica de Cianobactérias e Microalgas). The ribosomal sequences achieved 100% sequence coverage and 96 to 99% identity to sequences in the NCBI database. PCR was positive for the presence of the *mvn* gene in the isolates and amplicon sequences showed 100% sequence coverage and 96% identity to the contig C236 of *M. aeruginosa* PCC7806 and *mvn* gene of *M. aeruginosa* PCC7806. These results demonstrate the auspicious biotechnological potential of cyanobacteria poorly explored in the Amazon.

Keywords: Amazonia, anti-viral, cyanobacteria, *Microcystis*, microvirin

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