10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil
Section: 05

COMPARATIVE ANALYSIS OF THE CHROMATOGRAPHIC PROFILE OF A RUBIACEAE SPECIES CULTIVATED *IN VITRO* UNDER DIFFERENT WAVELENGTHS BY HPLC-DAD

Emilly de Jesus Franco Silva[1*], *Milton Nascimento da Silva*[1], *Sônia das G. S. R. Pamplona*[2], *Osmar Lameira Alves*[3], *Thalia da Silva Oliveira*[4], *Thainara da Silva Oliveira*[4]

Emillyjfrancosilva@gmail.com

1- Biotechnology College, Federal University of Pará, R. Augusto Corrêa, 127-483, Belém, Brazil. 1,2- Amazon Integrated Metabolomics Center, Institute of Exact and Natural Sciences, Federal University of Pará, Belém 66075-110, Brazil; 3- EMBRAPA Eastern Amazon, Belém 66095-903, Brazil, 4- Biotechnology College, Federal University of Pará, R. Augusto Corrêa, 127-483, Belém, Brazil.

Species of the Rubiaceae family are recognized for producing alkaloids of pharmacological interest. The naturally low yield of these secondary metabolites represents a challenge for their large-scale application. *In vitro* cultivation, including manipulation of light conditions, culture medium, and temperature, offers a promising alternative for optimizing metabolite production. This study aimed to compare the chromatographic profile of the species cultivated *in vitro* under different light wavelengths (green, yellow, and white treatments) with leaves collected under natural conditions (control treatment) using HPLC. Sample preparation was carried out with 100 mg of dried leaves and plantlets, extracted with 2.0 mL of ethanol by ultrasonic bath for 30 minutes (2x). The resulting solution was filtered through an SPE cartridge for HPLC-DAD analysis. Chromatographic analysis was performed on a C-18 column (150 × 4.60 mm); room temperature; mobile phase: A (water, 0.1% formic acid) and B (acetonitrile, 0.1% formic acid); gradient elution (10–100% ACN); flow rate: 1.0 mL/min; injection volume: 30 µL; analysis time: 30 min; detection: 200–400 nm. Comparative analysis of the chromatograms revealed no significant qualitative differences among the treatments. However, variations in signal intensity were observed in the retention time range of 1.90–10.0 min. The white-light treatment exhibited more intense peaks compared to the others, suggesting a higher concentration of certain compounds. In the retention time range of 9.7–10.2 min, no peaks were detected under yellow light treatment, while signals were present under both white and green light.

Keywords: *In vitro; light; HPLC; chromatographic profiles; secondary metabolites.*