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

Section: 05

METABOLIC PROFILING OF ECLIPTA PROSTATA CALLUS CULTURE UNDER EPIGENETIC MODULATION

Bruna Gomes Bitar[1], Daniel Yuri Akiyama[2], Ana Maria Soares Pereira[1], Taicia Pacheco Fill[2], Adriana Aparecida Lopes[1*]

adrianalps@gmail.com

1-Biotechnology Unit, University of Ribeirão Preto (UNAERP), Av. Costabile Romano, 2201, Ribeirão Preto-SP, 14096-900, Brazil. 2-Institute of Chemistry, University of Campinas (UNICAMP), Rua Josué de Castro, s/n - Cidade Universitária, Campinas-SP, 13083-970, Brazil

Eclipta prostrata (L.) L., a medicinal species of the Asteraceae family, is native to Brazil. It is imperative to note that, given the medicinal importance of the species in question, strategies based on *in vitro* plant cell cultures have been explored. The synthesis of berberine by *Coptis japonica*, paclitaxel by *Taxus* species, shikonin by *Lithospermum erythrorhizon* cell cultures and ginsenosides by *Panax ginseng* cell cultures exemplifies the efficacy of medicinal compound production through plant cell cultures. In this study, we present a series of epigenetic control experiments employing the histone deacetylase inhibitor sodium butyrate (1 mM) in *E. prostata* callus culture. Following a three-week period of incubation, the methanolic extract was prepared from the callus culture. The analysis of crude extracts was conducted by liquid chromatography and high-resolution mass spectrometry, resulting in the generation of a molecular network. This network was constructed employing the Ion Identity Molecular Networking (IIMN) workflow on GNPS, alongside in silico prediction of molecular structural features using SIRIUS 4 with standard parameters for the Orbitrap mass analyser. The results of the study indicated the presence of six novel compounds that were produced during epigenetic modulation experiments using *E. prostata* callus culture. The molecular ions of 3,4-dimethylbenzoic acid (*m/z* 133.0648), cinnamic acid glycosylated *(m/z* 309.0969), lupeone (*m/z* 425.3776), ursolic acid (*m/z* 439.3568), syringin (*m/z* 390.1760) and monolinolenin (*m/z* 353.2682) were identified. The compound monolinolenin is a common constituent found in either GNPS or SIRUS 4. The present study reports the results of a metabolic profiling of *E. prostate* callus culture following epigenetic modulation. The in-silico prediction showed that all compounds are not found in the genus *Eclipta* but in other plants from Asteraceae family. The present study establishes a novel connection between these compounds in this species, thereby paving the way for potential biotechnological exploitation.

Keywords: *Micropropagation, medicinal plant, callus culture, GNPS.*