

european journal of histochemistry
a journal of functional cytology

ISSN 1121-760X
volume 69/supplement 1
2025

Proceedings of the 70th Congress
of the Italian Embryological
Group-Italian Society
of Development and Cell Biology
(GEI-SIBSC)

10-13 June 2025

organised by
Department of Life Sciences
University of Modena and Reggio Emilia

The conference will take place in Modena on 10-13 June 2025
at Complex of San Geminiano

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structure and composition, offering a promising tool to study ischemic injury. In this study, we developed and characterized an *in vitro* stroke model using cerebral organoids derived from human induced pluripotent stem cells (hiPSCs), generated at different time points and assessed for maturation using specific markers. To simulate stroke conditions, various durations of oxygen and glucose deprivation (OGD) followed by reperfusion (R) were tested, selecting a sublethal condition to study cellular responses. The model was analyzed using Western blotting, dPCR, immunofluorescence, and electrophysiology. Proteomic profiling by 2D SDS-PAGE was also performed to identify differentially expressed proteins². This 3D platform enables drug screening in a physiologically relevant context, and the multi-omics approach supports the identification of molecular mechanisms and therapeutic targets for ischemic brain injury.

Acknowledgements

This research was funded by Dompé farmaceutici S.p.A, by Progetto n. 74 – Piattaforma tecnologica integrata per l'identificazione e lo sviluppo di neurotrofine per il trattamento di patologie neurosensoriali a carico degli organi di vista e udito e patologie del CNS, rare o ad elevato bisogno di cura insoddisfatto (PIN-NACOLO) - CUP B19J23000180005 and by European Union-NextGenerationEU under the Italian University and Research (MUR) National Innovation Ecosystem grant ECS00000041-VITALITY-CUP E13C22001060006.

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PRELIMINARY STUDIES ON THE ROLE OF BIOACTIVE MOLECULES IN THE MODULATION OF THE ETOSIS PROCESS

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Extracellular trap formation, known as ETosis, represents a key innate immune strategy in vertebrate and invertebrate organisms, activated to combat pathogen invasion. However, it has also been linked to the onset of autoimmune disorders, chronic inflammation and cancer^{1,2}. Our study investigated the effects of natural products on the modulation of ETosis and inflammation in the invertebrate species *C. quadricarinatus* and *A. lixula*, as well as in murine RAW 264.7 macrophages. The invertebrates were immunostimulated with *S. aureus* and co-treated with extracts from leaves (GLE) and rhizomes (RE) of *P. oceanica*. Quantification and evaluation using fluorescence microscopy showed a decrease in extracellular trap (ET) release following co-treatments. RAW 264.7 cells were immunostimulated with *E. coli* lipopolysaccharide and co-treated with GLE and RE and polyphenols extracted from olive mill wastewater (OMW). ET formation was monitored by quantifying extracellular DNA (exDNA) in control and treated conditions. The release of exDNA decreased following the co-treatment with GLE and mainly OMW. ELISA assays for TNF- α and IL-6 secretion also confirmed the anti-inflammatory activity

of both extracts. Preliminary MTT assay and Griess reactions were performed using polyphenols from OMW in order to evaluate the dose-response effect and the anti-inflammatory potential of the preparation. The data collected thus far provide an excellent basis for an in-depth molecular study on the modulation of ETosis and inflammatory processes.

Acknowledgements

This work was supported by PRIN PNRR grant and National Recovery and Resilience Plan (NRRP), Mission 4, CUP E93C2200109123456, Project title "National Biodiversity Future Center—NBFC"

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BIOINFORMATIC PIPELINE FOR THE EXTRACTION OF MOLECULAR MARKERS FROM NANOPORE TRANSCRIPTOMIC DATA IN *POMACEA CANALICULATA*

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Pomacea canaliculata is a freshwater pulmonate gastropod known for its high invasiveness, its role as an intermediate host for human parasites, and its remarkable regenerative capacity in adulthood. Despite the increasing interest in this species, molecular-level knowledge remains limited, and currently available cellular markers are scarce. Thanks to advances in bioinformatics and the integration of artificial intelligence-based tools, the analysis of large transcriptomic datasets has become significantly more accessible, efficient, and accurate. In this study, we developed an integrated bioinformatic pipeline, combining custom scripts with tools reported in the literature, with the aim of identifying cell-specific markers across different tissues of *P. canaliculata*. Key steps in the pipeline include the generation of subtractive databases to isolate tissue-specific components, filtering of sequences based on predicted subcellular localization, and identification through comparison with annotated public databases. This approach enabled the generation of refined datasets containing candidate sequences as potential molecular markers, selected according to filtering criteria defined within the pipeline. Additionally, transcriptomes were assembled to serve as valuable resources for future biological and molecular studies on this species.

IMPACT OF COCAINE ON HUMAN COLORECTAL ADENOCARCINOMA CELLS

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Drug addiction is one of the most global issues in the 21st century.