POSTERS

MODULATION OF ETOSIS BY BIOACTIVE EXTRACTS DERIVED FROM MARINE RESOURCES AND AGRI-FOOD BY-PRODUCTS

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ETosis is an evolutionarily conserved immune mechanism in vertebrates and invertebrates, characterized by the release of chromatin and granule proteins from immune cells (primarily leukocytes) to form extracellular traps (ETs) aimed at neutralizing pathogens [1]. Its dysregulation is implicated in various pathologies: insufficient production increases susceptibility to infections, whereas excessive persistence or overstimulation contributes to the onset of autoimmune diseases, chronic inflammation, and cancer [1,2].

This study evaluates the impact of natural compounds on ETosis modulation. Murine RAW 264.7 macrophages were stimulated with PMA and treated with extracts from Posidonia oceanica leaves (GLE) and rhizomes (RE), as well as polyphenols from olive mill wastewater (OMW).

ET formation was assessed by immunofluorescence confocal microscopy (with and without DNase I application), and dot blot techniques for detecting total histones and the ETosis marker citrullinated H4 histone, further supported by spectrophotometric quantification of extracellular DNA. Cumulative results revealed that ET formation was reduced in the presence of GLE, RE, and OMW.

Western blot assays were utilized to explore the involvement of the JNK, ERK, p38 and AKT pathways, NF-κB signaling, and key cell death markers, specifically caspase-1, gasdermin D and p-MLKL, in the GLE and RE induced inhibition of Etosis, while parallel investigations with OMW remain ongoing.

These findings highlight the potential of natural biomolecules in regulating ETosis and inflammation, supporting sustainable strategies based on marine resources and agri-food by-products.

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References

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