University of Naples Federico II

Department of Pharmacy

PhD course

Nutraceuticals, Functional Foods and Human Health

XXXLX cycle

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Identification and pharmacological characterization of multi-target antinflammatory natural products

Inflammation is a central component of widespread chronic and disabling diseases. Multiple pro-inflammatory, immunomodulatory, and pro-resolving signalling cascades form an interacting network that orchestrates the physiological and pathophysiological aspects of inflammation. The balance among these mediators determines the evolution of the inflammatory process towards a progression and/or chronicity or resolution. Despite anti-inflammatory drug discovery is very intensive, inflammatory diseases remain among the most serious health burdens and the medical need for more potent and safe anti-inflammatory drugs. Compelling evidence suggest that for complex inflammatory diseases an interference with multiple targets is better than targeting a single key factor regarding drug efficiency, side-effects and adverse compensatory mechanisms. An increasing number of pre-clinical studies show the efficacy and safety of multi-target natural products, they are still underrepresented as starting points for multi-target drug discovery. We have recently demonstrated that natural products such as cannabidiol (1), Astragalus membranaceous extract (2), boswellic acid (3), vitamin E long-chain metabolites (4, 5), induce lipid mediator class switch affecting multiple targets and promoting the resolution of inflammation.
The aim of this project will be to identify natural products with anti-inflammatory activity affecting multi targets. To this aim in vitro (macrophages, epithelial cells and fibroblasts) and and in vivo models of acute/chronic inflammation (zymosan-induced peritonitis, allergen-induced asthma, bleomycin-induced pulmonary fibrosis, etc) will be used.
The project is according to Mission 4 PNRR and Progetto di eccellenza TRAVEL.

References

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