

ANTIINFLAMMATORY AND NEUROPROTECTIVE EFFECT OF PROBIOTIC COMSUMPTION IN MOUSE MODELS OF HUMAN DISEASES

Gut Brain Microbiota (GBM) Group:

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Background:

Intestinal microbiota affects the health of the gut, and influences centrally mediated systems involved in brain homeostasis through the "gut-brain" axis. In this context, the administration of live bacteria (Probiotics) seems to represent a very promising approach in the treatment of the central nervous system alterations.

Methods and Results:

The GBM Group is dealing with the study of effects of probiotics in 3 different mice models of human diseases:

- 1) We indicated that probiotics prevent the LPS-dependent increase of pro-inflammatory cytokines in the gastrointestinal district, in cerebral cortex and hippocampus where we observed a strong enhancement of neurogenesis.
- 2) We demonstrated that probiotics reverse the anxiety- and depressive- like behaviour and normalize the neuro-inflammatory state in mice subjected to maternal separation, by the modulation of gut microbiota and SCFAs production.
- 3) We evaluated an ameliorative action of probiotics on the dystrophic phenotype of skeletal muscles in a mouse model of Duchenne muscular Dystrophy.

Conclusions and Significance:

Our findings extend the knowledge on the use of probiotics as a non-pharmacological therapeutic tool not only in condition of gastrointestinal dysfunction, but also in the presence of neuro-inflammatory pathologies, in the alterations of the emotional sphere and finally in disease associated with chronic inflammation.

Keywords:

Probiotics, inflammation, anxiety- and depressive- like behaviour, dysbiosis, microbiota, SCFA.

References:

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- 3) Petrella C, Strimpakos G, De Santa F, Fiore M, Mora D, Arioli S, Farioli-Vecchioli S. “Effect of Lactobacillus farciminis supplementation in preventing LPS-induced hippocampal neuroinflammation, in mice” Pharmadvances, 2020 April, Vol. 2 (No.1)

Thematic Area:

- Microbiome: from Research to Clinics

Infrastructures:

In our project we utilized mice from EMMA-INFRAFRONTIERS Infrastructure