

A mouse model of alcoholic liver disease reveals protection by *Lactobacillus fermentum*

Rosario Barone¹ - Francesca Rappa¹ - Filippo Macaluso² - Celeste Caruso Bavisotto¹ - Claudia Sangiorgi¹ - Gaia Di Paola¹ - Giovanni Tomasello¹ - Valentina Di Felice¹ - Vito Marciàno¹ - Felicia Farina¹ - Giovanni Zummo¹ - Everly Conway De Macario³ - Alberto J.L. Macario³ - Massimo Cocchi⁴ - Francesco Cappello⁵ - Antonella Marino Gammazza⁵

¹Department of Experimental Medicine and Clinical Neurosciences, University of Palermo, Palermo, Italia - ²eCampus University, Faculty of Motor Science, Novedrate, Italia - ³Department of Microbiology and Immunology, University of Maryland, Baltimore, USA - ⁴Department of Medical Veterinary Sciences, University of Bologna, Bologna, Italia - ⁵Department of Experimental Biomedicine and Clinical Neurosciences, University of Palermo, Palermo, Italia

The knowledge and treatment of alcoholic liver disease is still plagued with gaps mostly due to the inherent limitations of research with patients. We developed an animal model for studying liver histopathology, Hsp-chaperones involvement, and response to treatment. The system was standardized using mice to which ethanol was orally administered alone or in combination with *Lactobacillus fermentum* for 4, 8 and 12 weeks and applying a battery of techniques (histology, immunohistochemistry, Western blotting, real-time PCR, immunoprecipitation, 3-nitrotyrosine labeling) to assess liver pathology and Hsp60, iNOS gene expression and protein levels, and Hsp60 post-translational modifications. Steatosis score, iNOS levels, and nitrosylated proteins (e.g., Hsp60) decreased after probiotic intake reducing considerably ethanol-induced tissue damage. However, one may assume that the probiotic tested has a gut protective effect and, possibly, anti-steatotic and antioxidant effects in the liver. Our results provide novel insights that may be taken into account while devising new approaches for treating liver diseases associated with alcohol consumption (1).

References

- [1] Barone et al. (2016) Alcoholic Liver Disease: A Mouse Model Reveals Protection by *Lactobacillus fermentum*. *Clin Transl Gastroenterol* 7:e138; doi: 10.1038/ctg.2015.66.

Keywords

Ethanol-induced liver pathology; steatosis; probiotics.