

8TH EUROPEAN
IMMUNOLOGY CONFERENCE

June 29-July 01, 2017 Madrid, Spain

The hope of immunonutrition**José Moisés Laparra Llopis**

Central Pavilion of the Old Hospital of Cantoblanco, Spain

Recent data started appearing to show that immuno-nutritional factors and its influence on and interaction with the gut microbiota, and finally their crosstalk with the host's immune system are the important determinants of gut-liver axis health, metastasis-initiating cells and cancer promotion. For example, multi-structural and multifunctional cell surface molecules such as CD44, also guiding leukocyte extravasation, and the fatty acid receptor CD36 to metastatic penetrance and tumor growth. Moreover, innate immune activators, particularly, agonists of Toll-like receptor (TLR)-4 have been identified as critical players in hepatocellular carcinoma promotion and even modulate the immune-mediated checkpoint blockade. These can be targeted by nutrients, immunologically active, modulating the plasticity of both innate and adaptive immune responses. Personalized nutrition and, moreover, nutrition precision could have a significant impact on health to reduce the risk of metabolic and immune diseases and, particularly those associated to cancer promotion and/or progression. To date, major research interest has been focused on the influence of pre/probiotics, although, additional immunonutritional factors are also relevant even modulating the polarization and activation of immune responses. However, there remain key unanswered questions about immunonutritional factors that overall require a concerted effort to overcome the usually fragmented and compartmentalized approach to address their impact.

Biography

José Moisés Laparra Llopis holds a PhD in Pharmacy gained during his stay at the High Research Council of the Spanish Government (CSIC). His scientific career is focused on the field of intestinal homeostasis and the cross-talk within gut-liver axis. The novelty and scientific and social impact of his studies was used by the European Food Safety Authority to establish recommendations concerning staple foods. He held a leading position on prebiotic research awarded by The Fulbright Commission to conduct Post-doctoral research in the Food Science Department at Cornell University (NY, USA). After his relocation to CSIC, a continuous contact and interaction with internationally renowned enterprises and research groups constitutes a constant in his career; where he took major responsibilities overseeing several precompetitive funded projects. This experience favored his incorporation to the Institute of Translational Immunology at the University Medical Center of Mainz University (GER) as independent Researcher. Currently, as Senior Researcher at IMDEA Food (Madrid, SPN) he develops immunonutritional-based precision strategies to selectively modulate innate immune responses preventing/treating the risk for/severity of liver-related metabolic and immune diseases and hepatocellular carcinoma. Particularly, his research approaches naturally occurring food components with powerful immunostimulatory property of toll-like receptors (TLRs) for active immunotherapy against liver metabolic dysfunction and cancer promotion. Here, his research efforts are focused on the impact and functional differentiation and polarization of macrophages, as relevant prognostic biomarkers of tissue damage and tumor progression. He develops strategies to selectively modulate metabolic programming of antigen presenting cells that have important roles in the regulation of CD4+ T cells priming as well as immune checkpoint blockade thereby, preventing effector CD8+ T cells exhaustion that helps developing longer anti-tumoral response(s). He has published over 70 scientific articles and several book chapters.

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