Lmdd-MPFG Prevents HCC Occurrence through Dendritic Cells Related Signaling Pathways

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Abbreviations
HCC: Hepatocellular Carcinoma; LM: Lmdd-MPFG (Listeria Monocytogenes Δdal Δdat- multiple peptide fusing genes); DCs: Dendritic cells; CTL: Cytotoxic Lymphocyte

Commentary
Hepatocellular carcinoma is the most common and deadliest form of primary liver tumors with limited treatment options. Immunotherapy is a rising promising treatment in recent years. An attenuated hepatocellular carcinoma-specific Listeria vaccine (Lmdd-MPFG, LM), constructed by is proven to have potency to induce a strong and specific anti-tumor cellular immunity to HCC [1]. It has been proven that dendritic cells (DCs) play an essential role in Lm infection. In this paper, the researchers elucidated the valuable mechanism how DC initiates and induces anti-HCC immunity by Lmdd-MPFG vaccine. The authors found co-culture with LM vaccine accelerates bone marrow DCs and make them over-express NOD1, NLRP3 and TLR4 via NF-kB signaling pathway activation. Conversely, DCs can assist LM distribution in the spleen and promote LM mediated antitumor effects in tumor-bearing mice. The findings revealed that enhanced CTL responses against LM infection and induced anti-tumor effects were mainly through promoting IL-17A-producing T cells differentiation. Moreover, functional defects of dendritic cells were detected in HCC patients and the interactions between NLRP3, NOD1/2 and TLR4 might constitute a potential immune regulation mechanism that accounts for the efficacy of DC and LM combination therapy. This combination immunotherapy represents a potentially beneficial option for HCC patients, and provides an immune regulatory direction in LM vaccine-related tumor immunotherapy (Figure 1).

Figure 1: LM promotes maturation of BMDCs with PRRs presentation and induces MPFG-specific T cells.

References