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Cellular vaccines in listeriosis: Role of the *listeria* antigen GAPDH

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The use of live *Listeria* based vaccines shows serious difficulties to be administrated to immunocompromised individuals. However, cellular carriers present the advantage to induce a multivalent innate immunity as well as cell-mediated immune responses, constituting novel and secure vaccine strategies in listeriosis. Here, we compare the protection abilities of dendritic cells and macrophages and also their safety. We examined the immune response of these vaccine vectors using two *Listeria* antigens, listeriolysin O (LLO) and glyceraldehyde-3-phosphate-dehydrogenase (GAPDH) and several epitopes such as the LLO peptides, LLO₁₈₉₋₂₀₁ and LLO₉₁₋₉₉ and the GAPDH peptide, GAPDH₁₋₂₂. We discarded macrophages as safe vaccine vectors since they show anti-*Listeria* protection but also high cytotoxicity. Dendritic cells loaded with GAPDH₁₋₂₂ peptide conferred higher protection and security against listeriosis than the widely explored LLO₉₁₋₉₉ peptide. Anti-*Listeria* protection was related with the change caused by these epitopes on dendritic cell maturation, with a high production of IL-12 as well as significant levels of other Th1 cytokines as MCP-1, TNF- α , and IFN- γ and with the induction of GAPDH₁₋₂₂-specific CD4⁺ and CD8⁺ immune responses. This is the first study exploring the use of a novel GAPDH antigen as a potential dendritic cell-based vaccine candidate for listeriosis, which efficiency appears to highlight the relevance of vaccine designs containing multiple CD4⁺ and CD8⁺ epitopes.

Biography

Carmen Alvarez-Dominguez has completed his PhD at the age of 29 years from Universidad Autonoma de Madrid and Postdoctoral studies from Washington University School of Medicine on Small GTPases role in *Listeria* monocytogenes phagocytosis. She is the Director of the Group on Genomics, Proteomics and Vaccines at the Research Institute Marques de Valdecilla (IFIMAV) in Santander, Spain. She has published more than 25 papers in reputed journals and serving as an editorial board member of Microbes and Infection in OMICS Publishing Group. She also is coauthor of the patent: Immunogenic peptides against *Listeria* and Mycobacterium, antibodies and their uses.

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