

2nd International Conference on

TUMOR & CANCER IMMUNOLOGY AND IMMUNOTHERAPY

July 17-18, 2017 Chicago, USA

Bacteria: Friends or foes? Anticancer immune strategy by attenuated mutant strain of *Salmonella Typhimurium* (STMZNUABC)

Barbara Chirullo

Istituto Superiore di Sanità, Italy

Cancers are among the leading causes of death worldwide, entailing also what is now called financial toxicity. Conventional treatment modalities (surgery, chemo- and radiotherapy) have considerable limitations, which often result in incomplete destruction of the tumors. Therefore, prevention and control of cancer diseases is an important task for today's medicine, due to the possible implications of such diseases on public health and to their economic consequences. Therefore, the development of new therapeutic strategies to fight cancer is a priority for research. In this regard, the use of bacteria as alternative cancer therapeutics, in particular their potential to selectively target cancer cells has been studied for more than a century. We, therefore, investigated the tumor targeting efficacy and the mechanism of action of a specific attenuated mutant strain of *Salmonella Typhimurium* (STMznuABC) devoid of the whole operon coding for the high-affinity zinc transporter ZnuABC, which is required for bacterial growth in environments poor in zinc and for conferring full virulence to different Gram-negative pathogens. The results indicated that STMznuABC is able to penetrate and replicate into tumor cells in in vitro and in vivo models. The subcutaneous administration of STMznuABC in mammary adenocarcinoma mouse model leads to both reduction of tumor growth and increase in life expectancy of STMznuABC treated mice. Moreover, investigating the potential mechanism behind the favorable clinical outcomes, we provide evidence that STMznuABC stimulates a potent inflammatory response and a specific immune pattern, recruiting a large number of innate and adaptive immune cells capable to contrast the immunosuppressive environment generated by tumors. Exploring the tumor microenvironment of STMznuABC-treated mice, we found that STMΔznuABC is able to increase the number of neutrophil cells, interferon gamma CD8⁺ cells and a Th1 immune profile phenotype. On the whole, our results support the potential of STM as a promising anti-cancer therapy.

Biography

Barbara Chirullo has a PhD on Public Health Sciences And Microbiology. She has her expertise on human and veterinary health, particularly concerning the immune response, related to diseases of viral and bacterial origin, through different perspectives and with different tasks. She is currently young researcher at the Italian Public Health Institute (Istituto Superiore di Sanità) working on a European project, funded by the European Commission, as a winner of the Marie Skłodowska-Curie fellowship, in which she is focusing her attention on the interface between pathogens and immune system as an approach to understand their pathogenicity, and the development of new therapeutic strategies to selectively target tumor cells.

barbara.chirullo@iss.it

Notes: