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MUC1-MBP/BCG anti-tumor vaccine: An attractive anti-tumor vaccine

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Mucin 1 (MUC1), as an oncogene, plays a key role in the progression and tumorigenesis of many human adenocarcinomas and is an attractive target in tumor immunotherapy. To develop an effective anti-tumor vaccine for the treatment of MUC1-expressing human tumors, our research group generated a recombinant MUC1-MBP fusion protein combined with Bacillus Calmette-Guerin (MUC1-MBP/BCG) anti-tumor vaccine, the repeated animal experiments demonstrated that MUC1-MBP/BCG anti-tumor vaccine not only induced the release of MUC1-specific antibody and a MUC1-specific Th1-dominant immune response, but also enhanced the cytotoxic T lymphocyte killing activity and the activation of macrophage and NK cells. Furthermore, the results from tumor-bearing nude mouse model revealed that MUC1-MBP/BCG anti-tumor vaccine significantly inhibited the growth of Lewis lung cancer, B16-MUC1 (MUC1+) and human breast cancer cells. To help move the vaccine into a Phase I clinical trial, the pilot production process and quality control standard of pharmaceutical research have been accomplished, and a majority of pharmacodynamics, pharmaceutical and toxicology pre-clinical studies have been accomplished as well. A pre-clinical toxicity evaluation that comprised of a single-dose acute toxicity study in mice, repeat-dose chronic toxicity and immunogenicity studies in rats, and pilot toxicity and immunogenicity studies in cynomolgus monkeys showed that treatment with the MUC1-MBP/BCG anti-tumor vaccine did not cause any organ toxicity. Collectively, these data are beneficial to move the MUC1-MBP/BCG anti-tumor vaccine into a Phase I clinical trial, and suggesting that MUC1-MBP/BCG vaccine is an attractive anti-tumor vaccine.

Biography

Juan Wang is a Ph.D student, whose supervisor is professor Guixiang Tai from Department of Immunology, College of Basic Medical Sciences, Jilin University. Hers research is focus on the biological function of MUC1 and the therapy of cancer by targeting MUC1. She has participated in several projects, including the China National Natural Science Foundation and the Major Development Programs for New Drugs of the Chinese Academy of Sciences during the 12th Five-Year Plan Period . To date, she has been published 4 SCI indexed papers.

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