

Anti-Cancer Vaccine: GM-CSF/CD40 Ligand Gene Modified Tumor Cells

University of South Florida physicians have developed a promising anti-cancer vaccine, which is currently in Phase II clinical trials to treat malignant melanoma.

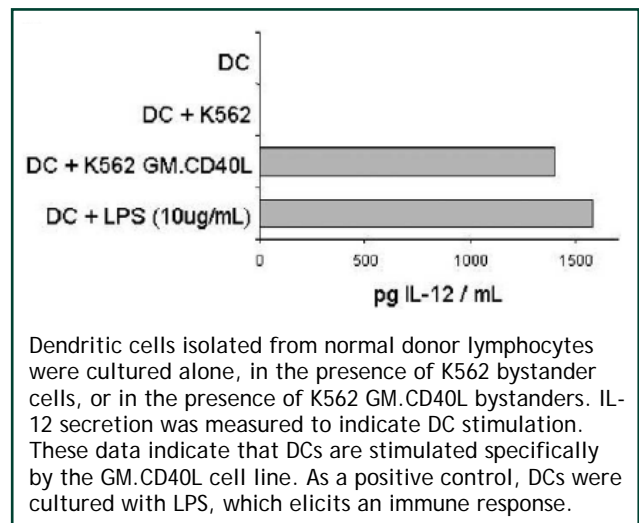
Over the past several decades, the use of conventional chemotherapy has yielded incremental progress in the treatment of advanced cancers. More recently, developments in anti-cancer research have elucidated the potential of using cancer vaccines as anti-cancer immunotherapeutic strategies. The immune system has the ability to recognize and eradicate tumor cells; however, many tumors have mechanisms to evade recognition.

Our investigators have developed a cancer vaccine that overcomes tumor cell evasion from immune recognition, and is currently showing promising results in Phase II trials. This vaccine utilizes cells engineered to secrete granulocyte-monocyte colony-stimulating factor (GM-CSF) and CD40L, which stimulate differentiation and activation of dendritic cells (DCs; see Figure). These genetically engineered cells are mixed with irradiated tumor cells and administered to the patient. The GM-CSF and CD40L stimulate differentiation of DCs, which present proteins from the irradiated tumor to the patient's T cells, stimulate the T cells, and elicit a tumor-specific immune response.

Advantages:

- Vaccine utilizes both GM-CSF and CD-40L, which act synergistically to recruit and activate dendritic cells, eliciting a stronger immune response than other vaccines.
- Allows immune system to overcome anti-recognition mechanisms used by tumor cells.

Vaccine stimulates tumor recognition and anti-cancer immune activity



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