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# Genetically modified T cells immunotherapy

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The field of cancer medicine is undergoing many novel research approaches worldwide. With the advance of the understanding of our immune system, many innovative therapies are being developed. Tumour survival and progression occur because the cancer cells evade the immune response with certain strategies. Normally, our immune system possesses various immune cells that guard our body against foreign bodies or antigens. T cells (also known as T lymphocytes) are the cells that eliminate such foreign bodies or a few tumour cells. They play a vital role in cell-mediated immunity by mediating long-lived, antigen-specific, effector and immune memory responses. But metastatic tumorous cells in cancer patients that grow at a phenomenal rate cause an imbalance in the equilibrium between immune cells and cancer cells. At this stage, cancer cells outnumber the immune cells and are able to suppress the immune response allowing the tumours to escape the immune system. To tackle this, researchers have cautiously studied therapies based on immune cells. The therapies are being developed based on the manipulation and infusion of immune cells into patients. The immune cells are derived from the same or other individuals and genetically modified, for instance, genetically modified T-cell immunotherapy. The concept of transferring T cells to patients has been established for treating a few viral diseases but for treating tumours, tumour infiltrating lymphocytes (TILs) are targeted. These can be isolated specifically at the site of the tumour by excising tumour tissue, followed by cultivation, activation and expansion ex vivo. Studies have revealed that on reinfusion, these genetically modified T cells have shown promising efficacy, particularly in the treatment of melanoma. Hence, the T cell adoptive transfer holds a great promising future in the permanent cure of cancer.

*Keywords: Genetically modified immune cells, Cancer cells, T cells, T cell adoptive transfer, Genetically modified T cells, Immunotherapy*

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