

The Future of Science: Immunotherapy for Colon Cancer

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The use of immune cells from healthy human beings to kill cancer cells are widely studied at present. We are currently studying a rare subset of immune T cells which are $\gamma\delta 2$ T cells found in the peripheral blood of healthy adults to kill colon cancer cells. Research statistics have shown that there is a positive correlation of $\gamma\delta 2$ T cell number and colon tumor cell death, making $\gamma\delta 2$ T cells excellent biomarkers for treatment of colon cancer (immunotherapy). In order to find the potential of killing efficiency of $\gamma\delta 2$ T cells, one should first count the number of cells present in the peripheral blood at the time when the cells are isolated, grow and expand them by stimuli using cytokines and small organic compounds with phosphate groups (phosphoantigens), identify their function and finally find their killing efficiency. We developed a simple and a cost efficient technique to determine the actual number of $\gamma\delta 2$ T cells in a mixed cell population at the time of initial isolation by using small polystyrene beads added to the cells and stained them with fluorochrome conjugated antibodies that are cross reactive to certain markers that are found in the surface of immune cells and counted them using flow cytometry based methods. Flow cytometry based methods were carried out to eliminate the troublesome and time consuming counting methods used by microscopy. Additional experiments were carried out to test the functionality and killing efficiency of these immune cells. The results obtained for these experiments are only in preliminary stages and thus the development is still in progress.

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