A Novel Combination of CXCR-4 Antagonist T22 with Conventional Immunotherapy Improves Treatment Efficacy in Established Tumors

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Technology description

Summary

Immunotherapy for cancer rarely results in complete responses, possibly due to chemokine receptor mediated activation of prosurvival pathways in cancer cells. CXCR4, is one such receptor that is expressed in a variety of cancers, including melanoma. Inhibiting these chemokine receptors may circumvent the ability of cancer to protect themselves from immunological attack.
This invention provides a method of treating cancers that expresses the chemokine receptor CXCR4 by a novel combination therapeutic approach. More specifically, the invention claims methods and compositions for the improved treatment of metastatic tumors by using a CXCR4 antagonist in conjunction with conventional monoclonal antibody based immunotherapy (e.g., anti-CTLA4 mAb) or immunostimulatory chemotherapeutics (e.g., cyclophosphamide). The invention clearly demonstrates that treatment of in vivo experimental lung cancer models with T22, a CXCR4 antagonist, followed by anti-Cytotoxic lymphocyte antigen (CTLA)-4 monoclonal antibody (or cyclophosphamide) treatment synergistically reduced the total tumor burden compared with the reduction of tumor burden when either agent is used alone. T22 treatment alone is not cytotoxic and has no demonstrated ability to increase non-specific host autoimmunity when used in combination with anti-CTLA4 mAb or cyclophosphamide. This invention has significant potential as a new, effective combination immunotherapy.
Market:
Chemokine receptor CXCR4 has a proven role in cancer metastasis in several cancers.
The anti-cancer market is projected to reach sales of $60 billion by 2010

Application area

A new method of combination therapy for cancer based on immunotherapeutics, including adoptive transfer of anti-tumor lymphocytes and treatment with immunostimulatory agents (monoclonal antibodies or chemotherapy).
A new therapeutic method for the treatment of CXCR4 chemokine receptor expressing cancers.

A new therapeutic method exploiting the role of chemokine receptor CXCR4 that potentially renders immunotherapy more effective without further increasing risks of patient autoimmunity.

Institution

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