Bi-shRNA-Furin/GM-CSF-Expressing Autologous Tumor Cell Vaccine

National Cancer Institute

Source

National Cancer Institute. bi-shRNA-Furin/GM-CSF-Expressing Autologous Tumor Cell Vaccine. NCI Thesaurus. Code C90552.

Autologous tumor cells transfected with a plasmid expressing recombinant human granulocyte macrophage-colony stimulating factor (rhGM-CSF) and bifunctional short hairpin RNA (bi-shRNA) against furin, with potential immunostimulatory and antineoplastic activities. Upon intradermal vaccination of bi-shRNA-furin/GM-CSF-expressing autologous tumor cell vaccine, expressed GM-CSF protein, a potent stimulator of the immune system, recruits immune effectors to the site of injection and promotes antigen presentation. The furin bifunctional shRNA blocks furin protein production. Decreased levels of furin lead to a reduction in the conversion of transforming growth factor (TGF) beta into TGF beta1 and beta2 protein isoforms. In turn, as part of the negative feedback mechanism, reduced furin protein levels inhibit TGFbeta1 and TGFbeta2 gene expression, thereby further decreasing TGF levels. As TGFs are potent immunosuppressive cytokines, reducing their levels may activate the immune system locally and this may eventually cause a cytotoxic T-lymphocyte (CTL) response against the tumor cells.