Designer Glycopeptides for Cytotoxic T Cell-based Immunotherapy of Carcinomas

Tech ID: 23024 / UC Case 2008-189-0

BACKGROUND

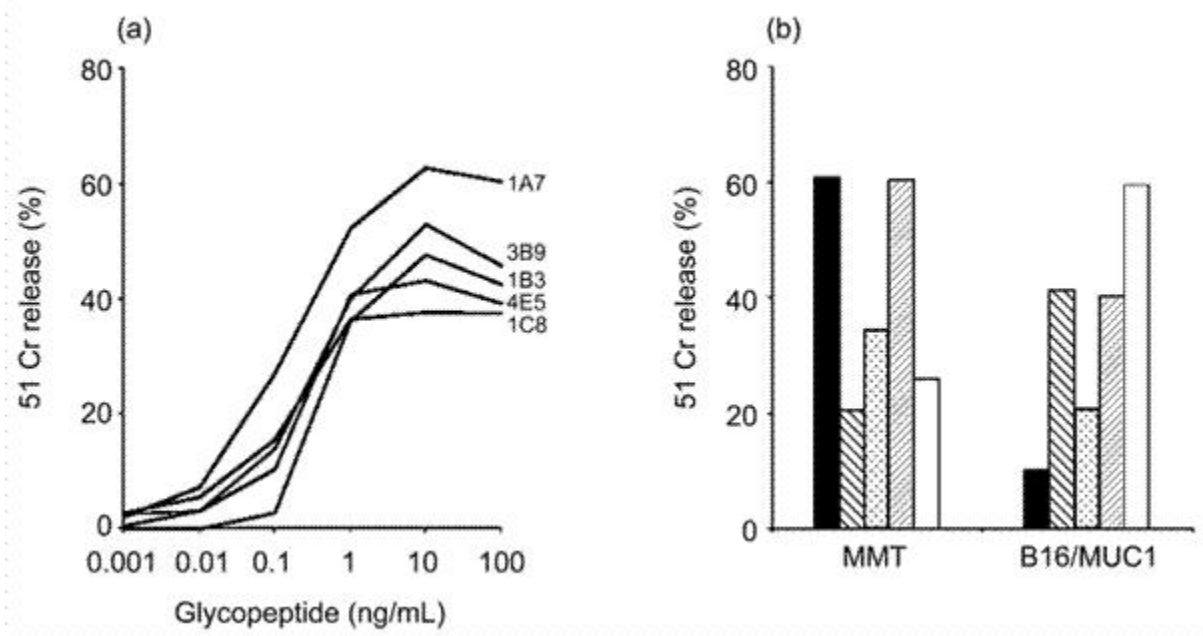
Tumor Associated Carbohydrate Antigens (TACA) (or carbohydrate-peptide conjugates) are utilized to generate cytotoxic T lymphocytes for a pan-cancer immune response.

Thomsen-Friedenreich antigen (TF) and its monomer (Tn) are glycoproteins that bind with high affinity to the major histocompatibility complex (MHC). TF and Tn are also tumor associated TACAs that are usually present on cancer cell surfaces in a cryptic form covered by N-acetyl neuraminic acid moieties and released into circulation in many different cancers. The fact that TACAs are not expressed in normal tissues presents a unique target for immunotherapy, if TACA can be designed to be more accessible and recognizable by the immune system.

While both tumor-derived peptides and tumor-derived carbohydrate antigens have been used in anti-cancer therapy, using a glycopeptide can potentially increase the efficacy of the immunotherapy.

TECHNOLOGY DESCRIPTION

UCSD researchers have demonstrated that human carbohydrate-specific cytotoxic T cells can be generated by immunizing in vitro. In addition, they have tested and shown that the glycopeptides can break immunological tolerance in wild type mice with well-established tumors that express the carbohydrate antigen.



Characterization of Tn-specific CTL clones. Dose–response relationship of five representative anti-Tn CTL clones to AIIA(GalNAc-O-S)FAAL measured in a classical 51Cr release assay at a 2:1 E : T ratio. In vitro killing of the syngeneic mammary tumor cell line MMT and the melanoma cells transfected with MUC1 and B16/MUC1, by anti-Tn specific CTL clones measured at a 20:1 E : T ratio.

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OTHER INFORMATION

KEYWORDS

carcinoma, glycopeptides, immunotherapy, vaccine

CATEGORIZED AS

- **Medical**
  - Disease: Cancer

RELATED CASES

2008-189-0

(□), 1C8.

From Ref (2) below.

RELATED MATERIALS

- Glycoconjugates as vaccines for cancer immunotherapy: clinical trials and future directions; Franco A. Anticancer Agents Med Chem 2008 Jan; 8(1) 86-91 Review. PMID 18220508 - 01/01/2008
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- Designer glycopeptides for cytotoxic T cell-based elimination of carcinomas. Franco et al. J Exp Med. 2004 Mar 1; 199(5); 707-16 PMID 14993254 - 03/01/2004
- Designer glycopeptides for cytotoxic T cell-based elimination of carcinomas. Franco et al. J Exp Med. 2004 Mar 1; 199(5); 707-16 PMID 14993254 - 03/01/2004

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,156,906	10/13/2015	2008-189

Additional Patent Pending

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