PNC-27

Purity: >98% (HPLC on request) | Molecular Formula: C188H293N53044S
Molecular Weight: 4031.7 g/mol | Sequence: PPLSQETFSDLWKLL

DESCRIPTION:

PNC-27 is a membrane active anticancer peptide that has been found to kill cancer cells by inducing membranolytic via cellular necrosis. It has been designed to bind tightly to the p53-binding pocket on the mdm2 protein, a negative regulator of the P53 tumor suppressor. Almost all cancers have a mechanism to decrease the functionality of P53 which can stop cellular replication. P53 is usually not expressed in high degrees in normal cells. Through blocking its inhibition via mdm2 protein modulators, we can make sure P53 is expressed. Thus, cancer cells can be selectively targeted for necrosis and death. This complex works in cancer cell membranes. Together, PNC-27 and Mdm2 result in trans-membrane pore formation which results in cancer cell death. This is evident in literature including studies on P53-null K562 in leukemia cells, melanoma, pancreatic cancer, breast cancer epithelial ovarian cancer, and additional cancers. Essentially, the peptide has been found to be cytotoxic to human cancer cells while having no effect on healthy cells and is functional almost across all cancer cell types.

PROTOCOL:

Content & Potency: Provided as a 5mg lyophilized vial

Vial reconstitution: 2ml sterile water for injection

Suggested dosage: Inject 200-300mcg (0.08-0.12ml or 8-12units) subcutaneously 3 times per week

CLINICAL RESEARCH:

Anticancer peptide PNC-27 adopts an HDM-2-binding conformation and kills cancer cells by binding to HDM-2 in their membranes.

The anticancer peptide PNC-27, which contains an HDM-2-binding domain corresponding to residues 12-26 of p53 and a transmembrane-penetrating domain, has been found to kill cancer cells (but not normal cells) by inducing membranolytic. We find that our previously determined 3D structure of the p53 residues of PNC-27 is directly superimposable on the structure for the same residues bound to HDM-2, suggesting that the peptide may target HDM-2 in the membranes of cancer cells. We now find significant levels of HDM-2 in the membranes of a variety of cancer cells but not in the membranes of several. untransformed cell lines. In colocalization experiments, we find that PNC-27 binds to cell membrane-bound HDM 2. We further transfected a plasmid expressing full-length HDM-2 with a membrane-localization signal into untransformed MCF-10-2A cells not susceptible to PNC 27 and found that these cells expressing full-length HDM 2 their cell surface became susceptible to PNC-27. We on conclude that PNC-27 targets HDM-2 in the membranes of cancer cells, allowing it to induce membranolytic of these cells selectively.

Sarafraz-Yazdi, Ehsan et al. "Anticancer peptide PNC-27 adopts an HDM-2-binding conformation and kills cancer cells by binding to HDM-2 in their membranes." Proceedings of the National Academy of Sciences of the United States of America vol. 107,5 (2010): 1918-23.