

## **Scientists at Downstate Medical Center, Department of Surgery detail research in cellular structures**

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A new study, 'The anti-cancer peptide, PNC-27, induces tumor cell lysis as the intact peptide,' is now available. According to recent research published in the journal *Cancer Chemotherapy and Pharmacology*, "PNC-27, a peptide that contains an HDM-2-binding domain from p53 attached to a membrane-penetrating peptide on its carboxyl terminal end, is cytotoxic to cancer, but not normal, cells. It forms transmembrane pores in the cancer cell membrane."

"Our purpose is to determine if the whole peptide or critical fragments induce pore formation in cancer cells. We have prepared PNC-27 with a green fluorescent label on its amino terminus and a red fluorescent label on its carboxyl terminus and treated MCF-7 breast cancer cells and untransformed MCF-10-2A breast epithelial cells with this double-labeled peptide to determine if combined yellow fluorescence occurs in the membrane of the cancer cells during cancer cell killing. At 30 min, there is significant combined punctate yellow fluorescence, indicative of intact peptide, in the cell membrane of cancer cells that increases during cancer cell lysis. MCF-10-2A cells show initial (30 min) uniform combined yellow membrane fluorescence that subsequently disappears. Unlike the cancer cells, these untransformed cells remain viable. PNC-27 induces cancer cell membrane lysis by acting as the whole peptide, not fragments. The punctate yellow fluorescence is due to interaction of PNC-27 with intramembrane targets of MCF-7 cells that do not exist in the membrane of the untransformed cell line. This interaction increases the lifetime of PNC-27," wrote K.A. Sookraj and colleagues, Downstate Medical Center, Department of Surgery (see also ).

The researchers concluded "Absence of these targets in the membranes of the untransformed MCF-10-2A cells results in initial uniform fluorescence of the double-labeled peptide in their membranes after which the peptide is degraded."

Sookraj and colleagues published their study in *Cancer Chemotherapy and Pharmacology* (The anti-cancer peptide, PNC-27, induces tumor cell lysis as the intact peptide. *Cancer Chemotherapy and Pharmacology*, 2010;66(2) 325-31).

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The publisher's contact information for the journal Cancer Chemotherapy and Pharmacology is Springer, 233 Spring Street, New York, NY 10013, USA.

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