Arruda Denise Costa, J Cancer Sci Ther, 3:7
doi: http://dx.doi.org/10.4172/1948-5956.S1.18

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference & Exhibition on
Cancer Science & Therapy
15-17 August 2011 Las Vegas, USA

The VH complementarity-determining region 2 (CDR2) of mAb C7 promotes beta-actin polymerization and induces apoptosis in cancer cells

Arruda Denise Costa

Experimental Oncology Unit, Federal University of São Paulo, Brazil

Malignant melanoma is the main cause of death in patients with skin cancer. Conventional chemotherapy is rather ineffective so that other strategies, including immunotherapy, have been tried to treat the metastatic form of melanoma. Recently, we described the antitumor effect of V_H CDR2 from mAb C7 tested as a synthetic 16-mer peptide (C7H2) against murine melanoma B16F10-Nex2 cells *in vitro* and *in vivo* (PLoS One 2008;3:e2371). We report now on the cytotoxicity of C7H2 to human tumor cells including melanoma (A2058), breast cancer (SKBR3, MCF7, MDA), glioblastoma (U87MG), cervical carcinoma (HeLa, SiHa) and colon carcinoma cells (LS180, HCT-8). The peptide was not toxic in 3 non-tumorigenic cell lines. C7H2 caused apoptosis in all cancer cells identified by annexin V binding, activation of caspase-3 and -8, chromatin condensation and DNA degradation. It induced abundant anion superoxide production, nuclear lamin disintegration and DNA leakage in the cytoplasm. Alanine-scanning showed that tyrosine and cysteine at the N-terminal sequence are essential for the protective activity of C7H2 *in vivo.* Biotinylated-C7H2 is internalized and colocalizes with phalloidin-rhodamine to actin-network. *In vitro*, C7H2 binds to beta-actin and induces actin polymerization. The C-terminal heptapeptide binds to actin but does not promote F-actin formation. An effect on actin dynamics could be linked to apoptosis in human tumors making C7H2 a potential therapeutic agent to be developed as an anticancer drug.

Biography

Denise Costa Arruda has graduated in Pharmacy at Federal University of Santa Catarina, and completed her Ph.D at the University of São Paulo, and postdoctoral studies at Federal University of São Paulo, Brazil. She has published 5 papers in reputed journals and got awards for poster presentation at two international meetings.