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INTERNATIONAL

Rose Bengal-Based Drug Kills Both Primary and Secondary Melanoma Tumors

Drug developers have discovered the immunological mechanism that underlies the ability of the candidate drug PV-10 to induce regression of primary and secondary melanoma tumors.

PV-10, which was developed by Provectus Pharmaceuticals, Inc., (Knoxville, TN, USA; www.pvct.com) is a 10% solution of Rose Bengal formulated for IL (intralesional) injection. Rose Bengal is a water-soluble xanthene dye that had been previously employed in liver function studies and is still in use by ophthalmologists.

Investigators at the Moffitt Cancer Center (Tampa, FL, USA; www.moffitt.org) worked with two different mouse models: BALB/c mice bearing MT-901 breast cancer and C57BL/6 mice that had been injected with B16 melanoma cells to establish one subcutaneous primary tumor and multiple secondary lung lesions.

Results published in the July 17, 2013, online edition of the journal *PLOS ONE* revealed that treatment of the subcutaneous lesion with a single injection of IL PV-10 led to regression of the injected lesion as well as the distant B16 melanoma lung metastases.

Splenocytes isolated from tumor bearing mice treated with IL PV-10 demonstrated enhanced tumor-specific IFN-gamma (interferon-gamma) production compared to splenocytes from saline-treated mice in both models. In addition, a significant increase in lysis of B16 cells by T-cells isolated after PV-10 treatment was observed. Transfer of T-cells isolated from tumor-bearing mice treated with IL PV-10 led to tumor regression in untreated mice bearing B16 melanoma.

The investigators concluded that these studies established that IL PV-10 therapy induced tumor-specific T-cell-mediated immunity, which supported the concept of combining IL PV-10 with immunotherapy for advanced malignancies. “Various injection therapies for melanoma have been examined over the past 40 years, but few have shown the promising results we are seeing with PV-10,” said senior author Dr. Shari Pilon-Thomas, assistant member of the immunology program at the Moffitt Cancer Center.

Reprinted from
September-October/2013 issue
of *Bio Research International*

