

17th Annual

MEDICINAL & PHARMACEUTICAL SCIENCES CONGRESS

July 05-06, 2018 Bangkok, Thailand



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Photodynamic therapy: A magic approach to treat melanoma

Photodynamic therapy (PDT) is a modality of cancer treatment based on light induced killing of cells after administration of a photosensitizer. It gives good cure rates for superficial skin tumors. PDT requires the presence of a photosensitizer (PS), light and oxygen. The PSs preferentially accumulates in target tissues and the photodynamic process is initiated with the application of light. Red light at 600 nm is used for its sufficient penetration into tissue which causes generation of highly destructive species that result in both cellular and vascular necrosis, along with initiation of apoptotic pathways. Melanoma is the most dangerous form of skin cancer, with a steeply rising incidence and a poor prognosis in its advanced stages. Melanoma is highly resistant to traditional chemotherapy and radiotherapy, although modern targeted therapies such as PDT is showing some promise. Malignant tumors take up and retain hematoporphyrin (Hp) to a much greater extent than do normal tissues; it is possible to deliver visible light to porphyrin-containing tumors when normal surrounding cells are depleted of the injected pigment. *In vitro* evaluation of photocatalytic bleaching (RNO) determination, cell viability test (3-(4, 5-Dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide), cellular uptake. *In vivo* study using malignant melanoma cells (B16F10), female BALB/c mice (20-25 g) - Gamma scintigraphy, tumor volume measurement, Hematological parameters and histo-pathological parameters were studied and the result obtained were analysis. It was concluded that that after PDT treatment, a remarkable damage of tumor vasculature and secondary necrosis of tumor tissue was observed along with a significant inhibition of tumor growth.

Biography

Surendra Lalwani has received his Doctorate degree from Department of Pharmaceutical Sciences, Dr. H.S. Gour University, Sagar. He has completed his B-Pharmacy and M-Pharmacy in Pharmaceutical Chemistry from Department of Pharmaceutical Sciences, Dr. H.S. Gour University, Sagar. His area of research focuses on Photodynamic therapy (PDT) and anti-cancer activities. He is associated with various academic and scientific bodies as a life member of Indian Pharmaceutical Association, Indian Pharmacy Graduate Association and Association of Pharmaceutical Teachers of India, Indian association of cancer research, Indian chemistry teachers association, International society of infectious disease. He is Subject Expert of the various institutes/colleges/Universities in the country. He joined as a speaker at Pharmaco-epidemiology Congress 2017 in Kuala Lumpur, Malaysia. He is a Reviewer/Referee of a number of national and international research journals. He had been awarded with Junior Research Fellow by UGC, New Delhi, India. He has 18 years of teaching experience. Currently he is working as a principal at Metro College of Health Sciences and Research, Metro College of Pharmacy Greater Noida.

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