

Presentation Only

14 March 2018

In vitro and in vivo studies of 2-photon photodynamic therapy for the treatment of conjunctival melanoma (Conference Presentation)

Layla Pires; Shireen Khattak; Sebastião Prata Vieira; Renan A. Romano; Vanderlei S. Bagnato; Yeni Yucel; Cristina Kurachi; Brian C. Wilson

Author Affiliations -**Layla Pires**

Instituto de Física de São Carlos (Brazil)

Shireen Khattak

Keenan Research Ctr. for Biomedical Science, St. Michael's (Canada)

Sebastião Prata Vieira, **Renan A. Romano**

Instituto de Física de São Carlos (Brazil)

Vanderlei S. Bagnato

Instituto de Física de São Carlos, Univ. de São Paulo (Brazil)

Yeni Yucel

Keenan Research Ctr. for Biomedical Science (Canada)

Cristina Kurachi

Instituto de Física de São Carlos, Univ. de São Paulo (Brazil)

Brian C. Wilson

Univ. of Toronto (Canada)

Proceedings Volume 10476, *Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in*

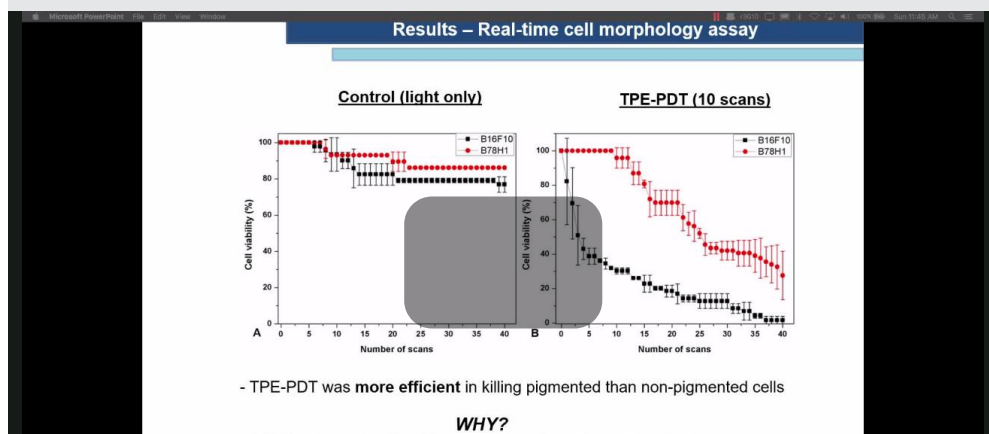
Photodynamic Therapy XXVII; 104760O (2018); doi: 10.1117/12.2288544

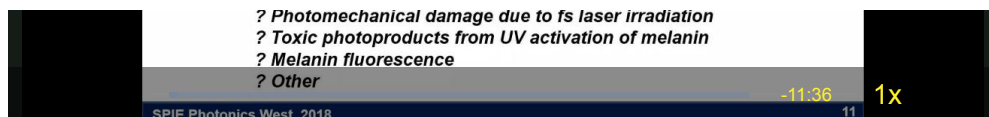
Event: *SPIE BiOS*, 2018, San Francisco, California, United States

Abstract

Ocular melanoma is the second most common melanoma type after the cutaneous variety and represents about 3.7% of all melanomas. Of these, 82.5% are uveal, 6.6% are conjunctival and 10.9% occur at other sites. It is a potentially lethal disease, especially when it results in metastatic spread. Conventional treatments include radiation (brachytherapy, teletherapy), transpupillary thermotherapy, surgical resection (partial or full), enucleation, chemotherapy, and immunotherapy, but recurrences are frequent, with high morbidity depending on the initial tumor size. Two-photon photodynamic therapy (2-PE PDT) involves the use of ultrashort (fs) long-wavelength (near-infrared, NIR) laser pulses to excite the photosensitizer rather than low-intensity continuous light. The advantage is that melanin has a low NIR absorption, improving the light penetration into the tumor. Our in vitro studies show that 2-PE PDT is more efficient in melanotic than in amelanotic melanoma cells, while the control 1-PE PDT gives similar responses in both cell lines. In vivo, using conjunctival melanomas grown in 10 mice, histology shows apoptosis only at the treatment site, with no damage to the surrounding normal tissue. Also, in a single session, the technique could eliminate the entire tumor mass. These initial results suggest that 2-PE PDT has a high potential for the treatment of pigmented ocular melanomas and may represent a new alternative to conventional therapies.

Conference Presentation





© (2018) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.

Citation [Download Citation](#)▼

Layla Pires, Shireen Khattak, [Sebastião Pratavieira](#), [Renan A. Romano](#), Vanderlei S. Bagnato, Yeni Yucel, Cristina Kurachi, [Brian C. Wilson](#), "In vitro and in vivo studies of 2-photon photodynamic therapy for the treatment of conjunctival melanoma (Conference Presentation)", Proc. SPIE 10476, Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXVII, 104760O (14 March 2018); doi: 10.1117/12.2288544; <https://doi.org/10.1117/12.2288544>

[Access the abstract](#)