Photodiagnosis and Photodynamic Therapy 56 (2025) 104789

Contents lists available at ScienceDirect

Photodiagnosis and Photodynamic Therapy

journal homepage: www.elsevier.com/locate/pdpdt

Abstracts from IPA 2025 Shanghai

https://www.sciencedirect.com/science/article/pii/S1572100025003230/pdfft?md5=55f8d6d2a53c44c65017dda1aeb7aa7e&pid=1-s2.0-S1572100025003230-main.pdf

with simultaneous PDT and PTT combination. ICG-ALA exhibited excellent biocompatibility and when treatment coupled with 640/808 nm 5 min co-irradiation caused significantly stronger phototoxicity at very low concentrations. ICG-ALA demonstrates visualization of cancer cells in both NIR (ICG) and visible (PpIX) regions allowing imaging-guided phototherapy.

doi: 10.1016/j.pdpdt.2025.105000

520 oral

Synergistic response of PEG coated manganese dioxide nanoparticles conjugated with doxorubicin for breast cancer treatment and MRI application

M. Fakhar-e-Alam, Muhammad Asif

Department of Physics, Government College University Faisalabad

Significance: In this research work, we designed a smart biodegradable PEG-coated MnO2 nanoparticles conjugated with doxorubicin (PMnO2-Dox NPs) for dual chemo-photodynamic therapy and magnetic resonance imaging (MRI) application.
Approach: PEG-coated MnO2 nanoparticles were synthesized by applying CVD apraoch.
Results: Surface morphology was confirmed via SEM analysis, results indicated the spherical and asymmetric agglomerated nanocluster of PMnO2-Dox NPs. In in vitro bioassay, the anticancer activity of PMnO2-Dox NPs were tested against breast cancer (MCF-7) cell line.
Results suggested that PMnO2-Dox NPs not only convenient for cancer treatment via combined chemo-photodynamic therapy but also address the way towards a comprehensive strategy for MRI application.
Conclusion: Current experimental strategy is very effective and comprehensive and cost effective.

doi: 10.1016/j.pdpdt.2025.105001

522 oral

Exploration of Treatment Parameters and Theoretical Basis of Hematoporphyrin-Based Photodynamic Therapy in Cholangiocarcinoma

Gang Wang, Yajun Wei, Shibo Xu, Cheng Wang

the First Affiliated Hospital of USTC

Objective: This study investigates the hemoporphyrin-based PDT for human cholangiocarcinoma cell lines RBE and HuccT1.
Methods: The treatment effect and treatment parameters were evaluated from both cell and xenograft mouse models.
Results: The optimal therapeutic dose and photosensitizer concentration for hemoporphyrin-based PDT cholangiocarcinoma cells were 2 J/cm^2 and 1.5 μg/mL, respectively. In the xenograft mouse model, there was a significant difference in tumor volume between the experimental and control groups on days 7, and 14 post-treatment ($p < 0.05$). On day 15, the tumor volumes of 0.54 ± 0.07 cm^2 and 1.35 ± 0.21 cm^2 in the experimental and control groups were statistically significant. The expression levels of CD31, VEGF-A, MMP2, MMP9 and Ki-67 in the experimental group were significantly reduced, while the Caspase-3 and Caspase-8 were opposite.
Conclusion: In vitro and in vivo results showed that hemoporphyrin-based PDT significantly inhibited the growth of cholangiocarcinoma cells.

doi: 10.1016/j.pdpdt.2025.105002

523 Poster

Laser gingivectomy - A case analysis of gingival hyperplasia after 7 years of full-mouth implant surgery

Bohan Yu, Lijun Luo

Tongji University

One patient developed symptoms of gingival hyperplasia after 7 years of full-mouth implant surgery. Gingival hyperplasia refers to the abnormal growth of gingival tissue, which may cover part or all of the implants. It not only affects the appearance, but also may pose a threat to oral health. In response to this situation, the patient underwent laser gingivectomy. The operation uses laser technology to accurately remove the hyperplastic gingival tissue, which has the advantages of less bleeding, faster recovery and less pain. After treatment, the patient 's gingival condition was significantly improved, and the stability and aesthetics of the implant were also improved. This treatment experience shows that laser gingivectomy is an effective method for the treatment of gingival hyperplasia.

doi: 10.1016/j.pdpdt.2025.105003

526 oral

Photodynamic therapy combined with radiotherapy combination in murine melanoma treatment

Kate Blanco [1], Natalia Mayumi Inada [1], Vanderlei Salvador Bagnato [1,2]

[1] *University of Sao Paulo*
[2] *Department of Biomedical Engineering, Texas A&M University, Texas, USA*

Melanoma is the type of skin cancer with the highest mortality rate and presents resistance mechanisms to several treatment techniques. Radiotherapy (RT) generates free radicals that react with cellular macromolecules such as DNA, RNA, proteins and membranes, causing dysfunction and cell death. This damage can favor the result of a consecutive application of photodynamic therapy (PDT), either by allowing greater penetration of the photosensitizer into the cells or by weakening the defense mechanisms. On the other hand, PDT promotes direct damage to the cell that can activate an immune response against tumor cells, which can optimize the effect of another technique applied in sequence, such as RT. This study compares different combinations of RT and PDT in the treatment of melanoma using balb/c nude mice and B16F10 cell line.

doi: 10.1016/j.pdpdt.2025.105004

527 Poster

pH-Responsive Polyzwitterion Modified Photosensitizer for Precision Photodynamic Therapy

Haochen Guo [1], Fransen Stefan [2,3], Wan Ling Foo [1], Yuto Honda [2,3], Kyohei Muguruma [2,3], Yutaka Miura [2,3], Takahiro Nomoto [4], Nishiyama Nobuhiro [1,2,3]

[1] *KAWASAKI INSTITUTE OF INDUSTRIAL PROMOTION Innovation Center of NanoMedicine*
[2] *Laboratory for Chemistry and Life Science, Institute of Innovative Research, Tokyo Institute of Technology*
[3] *Department of Life Science and Technology, School of Life Science and Technology, Tokyo Institute of Technology*
[4] *Department of Life Sciences, Graduate School of Arts and Sciences, The University of Tokyo*

Insufficient tumor accumulation and poor selectivity of photosensitizers remain major obstacles to the efficacy of photodynamic therapy (PDT) in cancer treatment. To address these limitations, we developed a tumor targeting photosensitizer-polymer conjugate by conjugating pyropheophorbide-a (Ppa) with a pH-responsive polyzwitterion,