



Abstracts from IPA 2025 Shanghai

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PGlu(DET-Car). This conjugate transitions from a negative charge at physiological pH, preventing interactions with normal cells, to a positive charge in acidic tumor microenvironments, enabling pH-dependent cellular uptake and selective tumor accumulation. Compared to PEG-modified Ppa and free photosensitizers, PGlu(DET-Car)-modified Ppa showed significantly enhanced cellular uptake and phototoxicity under acidic conditions *in vitro*. *In vivo* studies demonstrated its prolonged blood circulation, superior tumor accumulation, and effective PDT performance, with minimal off-target effects on normal tissues. These results highlight the potential of pH-responsive polyzwittterion-based systems as a promising platform for tumor-targeted therapies, addressing critical limitations of conventional PDT approaches and providing new strategy for precision cancer treatment.

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## 529 Poster

### Ultrasonic Scalpel Surgery combined with Photodynamic Therapy Versus Trichloroacetic Acid Application in Treating HPV-Related Condyloma Acuminata

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Genital infection with Human Papillomavirus (HPV) is a disease that affects a large fraction of the world's population. Condylomata acuminata or anogenital warts are benign lesions that are part of the clinical infection caused by low-risk HPVs, such as HPV6 or HPV11. This randomized clinical study, aimed to evaluate the efficacy of two different therapeutic approaches in treating genital lesions induced by HPV. Group 1, with 18 patients, received an innovative treatment combining lesion excision with an ultrasonic scalpel followed by photodynamic therapy (US+PDT). Group 2, with 18 patients, underwent standard treatment with 80% trichloroacetic acid (TCA). The US+PDT group required fewer treatment sessions, exhibited superior cosmetic outcomes, and reported zero lesion recurrence during an 18-month follow-up, in contrast to the TCA group's recurrence rate of 33.3%.

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## 531 oral

### Study of the efficacy and safety of photodynamic therapy for pigmented nevus using various photosensitizers under the control of fluorescence diagnostics and assessment of tissue hemoglobin oxygenation

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**Significance:** Photodynamic therapy in combination with various photosensitizers offers a potential alternative to surgical resection of pigmented nevus, with the advantage of preserving healthy surrounding tissue and preventing keloid scar formation.

**Approach:** Photodynamic therapy of pigmented nevus was applied under the control of video and spectral fluorescence diagnostics and spectroscopic evaluation of hemoglobin oxygenation in tissues.

**Results:** The treatment of pigmented nevus resulted in the regression of the skin lesion area, without the formation of keloid scar tissue.

**Conclusions:** Photodynamic therapy has been demonstrated to be a safe and effective treatment for pigmented nevus, ensuring precise exposure to the pathologic tissue without damaging the healthy tissue.

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## 532 Poster

### PpIX production analysis from ALA solutions application for the treatment of recurrent respiratory papillomatosis

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Recurrent respiratory papillomatosis (RRP) of the larynx is caused by human papillomavirus (HPV), resulting in symptoms such as hoarseness and respiratory difficulties. Surgical removal of the lesions is the standard treatment, but there is a high recurrence rate. Photodynamic therapy (PDT) may be a promising treatment due to its selectivity. Keratinized lesions were chemically induced in the tongues of rats to simulate histological changes of these lesions. Different formulations and application methods of the prodrug aminolevulinic acid (ALA) were tested: ALA with xanthan gum in gel form, ALA in saline solution, and ALA with DMSO in liquid form, with two application methods, directly on the lesion or in the throat, simulating systemic application and monitored for a period of 7 hours for the protoporphyrin IX production. These studies provide knowledge for the development of clinical protocols for the treatment of RRP.

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## 533 Poster

### Combination of photodynamic and sonodynamic therapy combating massive melanoma in pigs

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Photodynamic (PDT), sonodynamic (SDT) and sonophotodynamic (SPDT) therapy are alternatives for conventional treatments against cancer. They are Reactive Oxygen Species (ROS) based treatments which the reactive species are able to induce to kill cells and tumor necrosis. Singlet pigs with massive skin melanoma were used. Photogem (2 mg/kg) intravenous was injected 6 hours before treatment. For the treatment, Sonidel SP300 with an effective radiation area (ERA) of 5.0 cm<sup>2</sup> was coupled to the surface of the tumor. A total dose of 100J/cm<sup>2</sup> was delivered by LED (630 nm). Treatments were conducted in two equal sections. A significant reduction of treated and non-treated tumor size was observed, while clinical signs showed increase in the health of the animal. A notable increase in weight was observed. The synergy between PDT and SDT, can be a good approach for melanoma control.

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