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537 Poster

Evaluation of the photodynamic potential of curcumin in fractionated light doses against methicillin-resistant *Staphylococcus aureus*Taina Cappellini^{1,2}, Jennifer Soares², Natalia Inada², Kate Blanco², Alessandra Ramos², Vanderlei Bagnato^{1,2,3}¹ Federal University of Sao Carlos, UFSCar² São Carlos Institute of Physics (IFSC), University of Sao Paulo, USP³ Department of Biomedical Engineering, Texas A&M University, College Station

The emergence of antibiotic-resistant highlights the need for alternative treatments. Therefore, one treatment that has shown efficacy is photodynamic inactivation (PDI), which is capable of inactivating microorganisms through the interaction of a photosensitizer, light, and oxygen. In this study, the bacteria methicillin-resistant *Staphylococcus aureus* (MRSA), curcumin, and continuous and fractionated doses of blue light were used as a model. The results demonstrated that curcumin is capable of inactivating MRSA at the highest concentrations and doses of light tested. However, fractionated light application achieved more promising results compared to continuous light. It was possible to conclude that light fractionation has photodynamic potential under the conditions tested. However, further studies are needed to improve the technique to enable better results for the inactivation of resistant bacteria.

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538 Poster

Investigation on the Occupational Skin Health Status of Workers in Chemical Enterprises in Shanghai: A Cross-sectional StudyLimeng Yan¹, Xueer Zhang², Zhuoma Sita², Atikah Binti Abdul Latiff¹¹ University of Cyberjaya² Shanghai University of Traditional Chinese Medicine

Significance: Occupational skin diseases pose a significant threat to the health and safety of workers in the chemical industry.

Approach: Using a self-made questionnaire, a survey was conducted on 810 chemical enterprise employees.

Results: 19.26% of the respondents had a history of allergy related diseases lasting at least 6 months, and only 83 people (20.75%) had received formal medical testing. 39.01% of respondents are aware of the occupational skin disease risks associated with their work, but only about 15% take effective protective measures. The mastery of occupational skin health knowledge is relatively good, but only 92 respondents (11.36%) have truly mastered more knowledge related to occupational skin diseases.

Conclusions: Frontline workers lack awareness, and the focus of prevention and control should be on changing employees' behaviors. Enterprises do not attach enough importance to the prevention and management of occupational skin health.

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539 oral

Skin imaging technology assisted evaluation of photodynamic therapy for the treatment of Actinic Keratosis

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In recent years, skin imaging technology has shown significant application value in photodynamic therapy for Actinic keratosis. It plays an important role in the diagnosis and evaluation of diseases, monitoring during the treatment process, and evaluation after treatment. Skin imag-

ing techniques such as dermatoscopy, optical coherence tomography, and reflective confocal microscopy can provide high-resolution skin images to assist in early diagnosis and assessment of the condition. During photodynamic therapy, real-time monitoring of changes in skin lesions and potential adverse reactions can help doctors adjust treatment parameters to ensure treatment effectiveness. Evaluate the regression of skin lesions after treatment, assess treatment effectiveness, monitor the recurrence of skin lesions, and improve the long-term prognosis of patients.

Future research needs further optimize technology, combining multimodal imaging technology and artificial intelligence technology to improve the popularity of equipment and the convenience of operation, in order to provide more effective treatment plans for more patients.

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540 oral

Safety and effectiveness of robotic photodynamic therapyTatyana Grishacheva¹, Aleksandr Obornev², Sergey Nikitin³, Alexander Vasiliev⁴, Svetlana Chetu¹, Dar'ya Yanchuk¹, Alexander Dushkin⁵, Maxim Afanasiev⁶, Nasrulla Shanazarov⁷¹ Pavlov First Saint Petersburg State Medical University² Saint-Petersburg State Research Institute of Phthisiopulmonology of the Ministry of Healthcare of the Russian Federation³ LLC Medical Robotics, St. Petersburg, Russian Federation⁴ LLC Renomed, St. Petersburg, Russian Federation⁵ Moscow city hospital 52, Medical department №1, Moscow, Russian Federation⁶ Department of Clinical Immunology and Allergology, Sechenov University, Moscow, Russian Federation⁷ Medical Centre Hospital of President's Affairs Administration of the Republic of Kazakhstan, Astana, Kazakhstan

Significance: The relevance of conducting photodynamic therapy (PDT) in oncology using robotic systems offers a significant potential to minimize manual errors in light dose calculation, enhances precision in radiation targeting, and improves the overall effectiveness of PDT treatments.

Approach: This study evaluates the safety and effectiveness of robot-assisted PDT.

Results: Robot-assisted PDT demonstrates high efficacy in treating tumors, comparing to conventional manual PDT.

Conclusions: Robot-assisted PDT may facilitate better integration with imaging technologies, allowing real-time monitoring and adjustments during the procedure, further enhancing its effectiveness.

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541 oral

Enhancement of photodynamic therapy for pneumonia treatment: in vitro studiesIsabelle Almeida de Lima¹, Lorraine Gabriele Fiuzza de Jesus¹, Michelle Barreto Requena¹, Layla Pires², Natalia Mayumi Inada¹, Cristina Kurachi¹, Vanderlei Salvador Bagnato^{1,2}¹ São Carlos Institute of Physics² Department of Biomedical Engineering, Texas A&M University, College Station, TX, USA

The rise of antimicrobial resistance demands alternative therapies targeting multiple molecular sites, such as Antimicrobial Photodynamic Therapy (aPDT). By inactivating microorganisms through oxidative stress, aPDT reduces the risk of resistance development. Our research focuses on the efficacy of aPDT against pneumonia-causing pathogens, a leading cause of global mortality. While *in vitro* studies have demonstrated the safety and effectiveness of aPDT for *Streptococcus pneumoniae*