Evaluation of Mammalian Stress and Inflammatory Response to a Novel Porphyrin

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Rationale

- Bacteria can be found virtually everywhere and cause numerous life threatening diseases.
- The rise of antibiotic-resistant strains of bacteria has made the investigation of new therapeutics necessary.
- Resistant strains of *Pseudomonas aeruginosa* frequently infect the lungs and can be difficult to treat.
- Porphyrians have potential to serve as a novel antibacterial agent, however, their safety in a mammalian environment needs to be evaluated.

Methodology

- Co-culture lung model: Alveolar A549 epithelial cells and U937 macrophages grown at a 3:1 ratio.
- Porphyrin: “Zeke” synthesized at UD by Dr. Shawn Swavey.
- Safety evaluation: Introduce Zeke into the co-culture at multiple dosages, incubate for 24 hours, then assess the biological response of the cellular system.

Results

- Zeke demonstrated strong antibacterial properties providing evidence that it is dark activated and can be highly effective against *P. aeruginosa*.
- The safety of Zeke is supported by unchanged cell viability, minimal increase in cellular stress and no negative effect on the immune response.

Conclusions

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- The safety of Zeke is supported by unchanged cell viability, minimal increase in cellular stress and no negative effect on the immune response.