Title: Synthesis, characterization and biological study of water-soluble Silver Pyrazolates

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The emergence in antimicrobial resistance towards current available antibiotics has endangered the ability to prevent and treat a wide-variety of infections, prompting the research efforts towards finding alternatives. Ag(I) has multiple mechanisms of eradicating microbes, making it a great alternative to currently used antibiotics. In this research, we aim to prepare, characterize and assess the antimicrobial efficacy of a family of water soluble silver pyrazolato complexes as effective antimicrobial agents. Four new water soluble silver pyrazolato complexes, namely $[Ag_2(\text{-4-Cl-pz})_2(PTA)_4]$ (**1**), $[Ag_2(\text{4-Cl-pz})_2(PTA)_2]$ (**2**), $[Ag_2(\text{4-CH}_3\text{-pz})_2(PTA)_2]$ (**3**) and $[Ag_2(\text{3-CH}_3\text{-pz})_2(PTA)_2]$ (**4**) (where, PTA = 1, 3, 5-triaza-7-phosphaadamantane) were synthesized and isolated as white crystalline solids. The two step synthesis involves the formation of polymeric [Ag(pz*)]n species, followed by the addition of PTA in varied molar ratio. PTA has been chosen for two reasons: i) to impart aqueous solubility of the complexes, which is crucial for their physiological acceptability and ii) the lipophilic nature of the adamantyl moiety was also expected to facilitate the cellular internalization of these complexes. Certain pyrazole derivatives are part of many NSAIDs (Non-steroidal Anti inflammatory drugs), while PTA is also found to be biocompatible and constitute a crucial part in few anticancer drugs that are currently in Phase II clinical trials. Molecular structures of all complexes reported herein were authenticated by single crystal X-ray crystallography. All the complexes have also been characterized by ^{1}H and ^{31}P NMR spectroscopy. A qualitative antibacterial assay with a *soft skin and tissue infection* (SSTI) model (in Agar plate) indicated superior growth inhibition for the colony of a notorious nosocomial *Gram-negative* bacterial strain, namely, *Pseudomonas aeruginosa* (ubiquitous within burn wound infections). The efficacy of growth inhibition of **1** has been found to be approximately four times superior compared to $AgNO_3$, a known antibacterial used for burn wound infections in hospital settings.

Abstract Characteristics

- Around 250-300 words
- Begins with 1-2 sentences of Introduction
- Majority of Abstract – Data
- At the end are 1-2 sentences of Discussion, explaining what the data means and summarizing the work
- Talk about the importance of the work being done, or how it affects your field and the world

Poster Presentation

- Poster presentations are paper displays that must be prepared in advance. They may not include exhibits of models, devices or computer programs. Paper and supplies are not provided.
- Each presenter is provided with one side of a freestanding poster board measuring no more than 36″h x 48″w.
- The presenter must bring their own supplies and materials supporting their project.
- Presenters must be available to discuss their displays during their assigned session.
- Posters must be readable from at least three feet away
- The presentation title must be at least two inches high. Beneath the title, the name(s) of the student author(s), faculty adviser and school or institution must be at least one inch high.
- You may use charts, graphs, maps, photographs, illustrations, and pictures.
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