Toxicity of DNA Intercalating Agents in the Human Body

By: Jacob Snell

INTRODUCTION:

Throughout this Poster I will be showing the research and knowledge I have gathered not only on the importance of this topic but on how Intercalating agents could possibly be used in the future as a possible very successful cancer treatment. Discussed will be the mechanism and concepts of the process that these drugs perform inside the body.

Acridine and Measurement of Binding Affinity:

- Due to the property of fluorescence Acridine has it makes it very easy to measure and study in the body
- Acridine has a very high binding affinity leading to high success rates in DNA binding
- The permanent inhibition this agent has on DNA replication makes it very useful to study intercellular complex mechanisms with.

Chemical Mechanisms of Intercalation occurring

Agents, Mechanisms and Toxicity:

- There are multiple intercalating agents under research, the three main ones being, Acridine, Actinomycin, Ethidium Bromide.
- These agents bind to DNA which in turn inhibits a key replication enzyme called TOPOisomerase II
- Due to this inhibition and space between base pairing, mutations can arise in DNA replication
- Not only is replication inhibited but all DNA repair and translation becomes effected leading to cell death

Key Image 4

Pictured above are the three main agents being studied

Statistical Measurements of successful binding affinity to DNA

Possibilities for the Future:

With cancer being uncontrollable cell replication this research and technology with extreme studies performed could lead to a breakthrough in successful cancer research. If a way to attach a signal ligand to tumor cells and avoid healthy cells was discovered, this would lead to an extreme increase in cell selectivity and binding affinity. It is impossible for treatments such as this to [illegible] 2007 Apr

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Diagram Representation of an Intercalating agent

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