

Yang Guo, Ph.D.

Proposal Abstract (September 2002)

TARGETING AEROSOL DEPOSITION IN NASAL PASSAGES - EFFECT OF DIFFERENT BREATHING TECHNIQUES

The focus of this research is to determine the appropriate breathing technique for optimum intranasal drug delivery by a spray pump. The objectives of this work are four fold. The first is to capture nasal breathing patterns from healthy volunteers, and simulate physiologically justifiable nasal inhalations using a computerized breathing simulator. This consists of a fast responding electro-magnetic valve and a control and monitoring system. Waveforms of different shapes will be tested. The second is to design an in vitro model to predict nasal distribution of aerosol with different breathing techniques. Deposition testing will be performed with simulated breathing and nasal casts of different dimensions and geometry. The third is to investigate the influence of breathing techniques on in vivo aerosol deposition and rate of mucociliary clearance from the nasal passage. Regional distribution will be analyzed by gamma scintigraphy. The final objective is to seek a relationship between in vitro deposition pattern and in vivo product performance. If successful, this project will facilitate industry moving from laboratory to clinical evaluation more efficiently, and provide a better basis for nasal bioequivalence testing.

Education Summary

- Aug 2000 - Jan 2005: Graduate Student: Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland at Baltimore, Specialty : Industrial Pharmaceutical Research.
- Sept 1994 - July 1998: B. Pharm., School of Pharmaceutical Sciences, Beijing Medical University. GPA: 3.89.

Employment Summary

- Jan 2005 - Present: Schering-Plough Research Institute, Kenilworth, NJ.
- Sept. 2000 - Jan 2005: Laboratory Rotation, Department of Pharmaceutical Sciences, School of Pharmacy, University of Maryland at Baltimore. Studied polymeric drug delivery systems for imaging agents. Performed synthesis of HPMA and methacryloyl glycyglycine para-nitrophenol copolymers, and polymer-nitroxide conjugates for cancer diagnosis. Performed particle size measurement of nebulized albuterol solutions using a cascade impactor and HPLC.
- Sept. 2000 - Present: Teaching Assistant School of Pharmacy, University of Maryland at Baltimore · Preparation and instruction of pharmaceuticals and compounding laboratories for third and fourth year Pharm. D. students.
- Sept. 1998 - June 2000: Research Assistant Applied Chemistry Group, Department of Chemical Engineering Tsinghua University. Performed technology optimization on the synthesis of phosphatidic acids.
- Feb. 1998 - July 1998: Diploma Thesis written for the Bio-inorganic Drugs Group, Bio-inorganic Chemistry & Bio-inorganic Pharmaceutical Science Department, School of Pharmaceutical Sciences Beijing Medical University. My topic was "Studies on the programming control of matrix coagulation during Biomineralization". I focused on the coagulation dynamics of Silk-Fibroin and Collagen at different conditions, i.e. different pH, ion strength, temperature, and organic solvent by means of viscosity and light-scattering methods.

Honors and Awards

- Distinguished Student Fellowship of Beijing Medical University (1996-1997)
- Medical & Pharmacy Prize granted by Japan-Sino International Health Exchange Fund (1995-1996)
- Distinguished Student Fellowship of Beijing Medical University (1994-1995)