2011 International Conference of the Korean Society of Pharmaceutical Sciences and Technology

"Strategic consilience of multidisciplinary approaches for new drug discovery and development"

Plenary Lecture

- "Drug development strategy and vision of Osong medical innovation foundation"
  Yeo-Pyo Yun (Chairman, Osong Medical Innovation Foundation, Korea)

Biotechnology & Drug Delivery (BDD) KSPST-Biologics Research Division (KFDA) Joint Session

- "Stimuli-responsive elastin-like polypeptides for biomedicine, tissue engineering and drug delivery"
  Dong Woo Lim (Department of BioNano Engineering, College of Engineering Sciences, Hanyang University, Korea)
- "Fabrication of three-dimensional tissue models by layer-by-layer assembly"
  Mitsuru Akashi (Department of Applied Chemistry, Graduate School of Engineering, Osaka University, Japan)
- "The adsorption and internalization of gold nanoparticles by a cancer cell"
  Eun Chul Cho (Department of Chemical Engineering, Division of Chemical and Bioengineering, Hanyang University, Korea)
- "Design of functionalized liposomal nanocarrier and its applications"
  Young Wook Choi (College of Pharmacy, Chung-Ang University, Korea)
- "Engineering of soft nanomaterials for drug delivery: Opportunities and challenges"
  Tatiana Bronich (College of Pharmacy, University of Nebraska Medical Center, USA)
- "Combination of cationic lipid and polymers for gene delivery system"
  Jeong-Sook Park (College of Pharmacy, Chungnam National University, Korea)
- "Inhalation delivery systems for peptide drugs using nano- or micro-particles"
  Yu Seok Youn (School of Pharmacy, Sungkyunkwan University, Korea)

Polymer Science & Materials (PSM)

- "Development of siRNA delivery systems for RNAi therapeutics"
  Hyejung Mok (Korea Research Institute of Bioscience and Biotechnology, Korea)
- "New strategies to improve oral bioavailability of poorly water-solubule drugs"
  Fude Cui (The School of Pharmacy, Shenyang Pharmaceutical University, China)
- "Integrin receptor-mediated delivery of anticancer drugs"
  Yu-Kyoung Oh (College of Pharmacy, Seoul National University, Korea)
- "Polymer-anticancer drug conjugates for locally injectable delivery of cancer therapeutics"
  ChangJu Chun (College of Pharmacy, Chonnam National University, Korea)
- "Polymeric drugs as potential therapeutic system"
  Yoshiharu Kaneo (School of Pharmacy, Fukuyama University, Japan)
- "Tumor-acidity activated charge-conventional polymeric nanoparticles for drug and siRNA delivery"
  Jun Wang (School of Life Sciences, University of Science and Technology of China, China)
- "Hyaluronic acid-ceramide (HACE) based self-assembled nanoparticles for tumor-targeted drug delivery"
  Dae-Duk Kim (College of Pharmacy, Seoul National University, Korea)
- "Complex formation and tumor accumulation of porfirmer with PLL-g-PEG copolymer for photodynamic therapy"
  Arihiro Kano (Institute for Materials Chemistry and Engineering, Kyushu University, Japan)
- "Core/shell nanoparticles for chemotherapy"
  Soon Hong Yuk (College of Pharmacy, Korea University, Korea)
- "Gold nanorod-based theranostics"
  Yongdoo Choi (Molecular Imaging and Therapy Branch, National Cancer Center, Korea)
- "Bioreducible polymers with cell penetrating functionality for gene delivery systems and the applications"
  Tae-Il Kim (College of Agriculture and Life Sciences, Seoul National University, Korea)

Biopharmaceutics, Pharmacokinetics and Metabolism (BPM) KSPST-Biologics Research Division (KFDA) Joint Session

- "Using the Pareto principle to maximize drug efficacy and minimize adverse effects: A multi-objective function optimization of a couple of PK/PD models"
  James A. Uchizono (School of Pharmacy, University of the Pacific, USA)
- "Application of pharmacokinetic/pharmacodynamic modeling to expedite the discovery and early development of novel drug therapies"
  Joseph P. Balthasar (School of Pharmacy and Pharmaceutical Sciences, University at Buffalo, The State University of New York, USA)
- "The impact of circadian rhythm on drug transport"
  Young-Joo Lee (College of Pharmacy, Kyung Hee University, Korea)

Physical pharmacy & Formulation Design (PFD)

- "Skin distribution and permeation enhancement of lipid nanoparticles"
  Varaporn B. Junyaprasert (Department of Pharmacy, Mahidol University, Thailand)
- "Formulation and bioevaluation of extended-release metformin hydrochloride tablets"
  Nguyen Thien Hai (School of Pharmacy, University of Medicine and Pharmacy Ho Chi Minh City, Vietnam)
- "Development of controlled release microparticles for advanced orally disintegrating tablets"
  Eun-Seok Park (College of Pharmacy, Sungkyunkwan University, Korea)

Manufacturing Science & Engineering (MSE)

- "Development of timed-release press coated tablet composed of simvastatin and amlodipine"
  Jaseong Koo (HanAll BioPharma Co., Ltd., Korea)
- "Mesenchymal stem cells: targeted-delivery carriers used in gene therapy"
  Jianqing Gao (College of Pharmaceutical Sciences, Zhejiang University, China)
- "Bioavailability enhancement of PVP based hot melt extrusion formulation for drug candidate"
  Myoungki Baek (SK Biopharmaceuticals, Korea)
- "Stability prediction for amorphous form of pharmaceutical compound"
  Eun Hee Lee (College of Pharmacy, Korea University, Korea)
- "Effects of solid carriers on the crystalline properties, dissolution and bioavailability of flurbiprofen in solid self-emulsifying drug delivery system"
  Han-Gon Choi (College of Pharmacy, Hanyang University, Korea)
- "Nanogels with controlled photoactivity from polysaccharide/photosensitizer conjugates in photodynamic therapy"
  Kun Na (Division of Biotechnology, The Catholic University of Korea, Korea)
- "Development of an environmentally responsive nanovehicle for cancer passive targeting "
  Kyung Taek Oh (College of Pharmacy, Chung-Ang University, Korea)

Biopharmaceutics, Pharmacokinetics and Metabolism & Pharmaceutical Quality and Analysis (BPM & PQA)

- "Bioequivalence study of oral strip formulation of sildenafil"
  Hohyun Kim (Korea Medicine Research Institute, Korea)
- "Pharmacogenetic disposition of HMGCoA reductase inhibitors"
  Im-Sook Song (College of Medicine, Inje University, Korea)
- "Effects of 1alpha,25-dihydroxyvitamin D3 on drug transporters and enzymes "
  Han-Joo Maeng (College of Pharmacy, Inje University, Korea)

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Objectives: The main objective of this study was to prepare a solid form of lipid-based self-microemulsifying drug delivery system (SMEDDS) by spray drying with inert solid carriers to improve the oral bioavailability of poorly water soluble drug, fenofibrate. **Methods**: Liquid self-microemulsifying drug delivery system (SMEDDS) composed of oil, surfactant and co-surfactant for oral administration of fenofibrate was formulated. Solid SMEDDS formulations consisted of liquid SMEDDS and solid carrier were prepared by spray-dryer. These formulations were characterized by particle size of emulsion, the morphology and crystallinity of the solid SMEDDS were evaluated by DSC, SEM and X-ray diffraction. Furthermore, their stability, dissolution and pharmacokinetic study were compared to those of fenofibrate powder. **Results**: The aqueous solubility of fenofibrate (less than 0.29 μg/ml) was increased from to 0.33 mg/ml. The optimized liquid SMEDDS was a system consisting of Labrafil M 1944 CS, Labrasol and Capryol PGMC at voluminous ratio of 15 : 75 : 10, respectively. And, solid SMEDDS formulation consisted of liquid SMEDDS and solid carrier(Dextran) by using spray-dryer. The liquid and solid SMEDDS formulation showed similar droplet size (under 300 nm) and narrow and sharp distribution. The crystal form of solid SMEDDS was found to be converted to amorphous form, which was confirmed by the analysis of DSC and XRD. Furthermore, time for complete release of drug was 5-fold less than that of fenofibrate powder, which showed a limited dissolution rate. The pharmacokinetic parameters including AUC and Cmax were significantly increased by solid SMEDDS over that of pure fenofibrate. **Conclusion**: This solid SMEDDS could be used as an effective oral solid dosage form to improve the bioavailability of fenofibrate.

[pMSE-006] [11/10/2011 (Thu) 14:50 - 17:50 / Lobby]

Sildenafil-loaded orally disintegrating tablet with new lactate salt

Min Seok Kwon[1], Dong Wuk Kim[1], Abid Yousaf[1], Back Kum Kim[1], Young Keun Choi[2], Si-Young Jung[2,3], Jong Soo Woo[3], Chul Soon Yong[2] and **Han-Gon Choi***[1]

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To develop a sildenafil lactate-loaded orally disintegrating tablet with a faster drug effect onset and immediate action of erection, the orally disintegrating tablets were prepared with various amounts of menthol and colloidal silica using the direct compression technique followed by vacuum-drying. Their tablet properties such as friability, hardness, wetting time and disintegration time were investigated. The oral bioavailability of sildenafil in the orally disintegrating tablet was then compared with the sildenafil citrate-loaded commercial tablet (Viagra®) in rabbits. Sildenafil lactate was a new salt form with more improved solubility and alleviated bitterness compared to commercial salt, sildenafil citrate. As the amount of menthol in the orally disintegrating tablet increased, the friability increased and hardness decreased, resulting in a shorter wetting time and disintegration time. Colloidal silica did the opposite. The sildenafil lactate-loaded orally disintegrating tablet prepared with 45 mg/tab of menthol and 1.5 mg/tab of colloidal silica gave a hardness of 3–4 KP, friability less than 0.5% and disintegration time less than 30 sec, suggesting that it was a practical and commercial product with good tablet property and excellent efficacy. Furthermore, it gave higher AUC and Cmax, and shorter Tmax values than did the commercial tablet, indicating that it improved the oral bioavailability of sildenafil in rabbits compared with the commercial tablet. Thus, the sildenafil lactate-loaded orally disintegrating tablet might induce a fast onset of action and immediate