

hand, the swelling ratio of films were smaller than hydrogels. Sod. alginate/ polycarbophil 974p film (sod. alginate : polycarbophil 974p = 7 : 3) containing rhEGF showed 1.80 times of the curative ratio compared with poloxamer sol/gel system. Conclusions : Hydrogel/film was evaluated as optimal when the mixing ratio of sod. alginate:polycarbophil 974p was 7:3. Film was better than hydrogel in ulcer healing effect. Accordingly, film (sod. alginate : polycarbophil 974p = 7:3) containing rhEGF might be applicable for the convenient treatment of buccal mucosal ulcers. Acknowledgement : This work was supported by Korean Research Foundation Grant (KRF-2001-005-F20014).

[PE1-29] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Evaluation of solid surface properties by analysis of liquid penetration rate into powder bed - Examination of surface free energy -**

**Choi Woo Sik**<sup>o</sup>, Ha Jong Hak

*Pusan National University*

Evaluation of solid surface properties is very important for formulation of solid dosage form, specially insoluble drugs. The contact angle of insoluble drugs was measured by the penetration rate into powder bed using Washburn equation and wicking method. From the measured contact angle data, the surface free energy value of pharmaceutical powders  $\gamma_s$  was divided and analyzed into the polar component,  $\gamma_s^p$  and the dispersion component,  $\gamma_s^d$ . Furthermore, the data was interpreted for acid part,  $\gamma_s^+$  and base part,  $\gamma_s^-$  of surface free energy. The pharmaceutical powders such as DDB, UDCA and Phenytoin were used as model test samples of insoluble drugs. Octane, CCl<sub>4</sub>, CH<sub>2</sub>Cl<sub>2</sub>, C<sub>2</sub>H<sub>5</sub>NO<sub>2</sub>, DMF, ethylene glycol, formamide, and water were used as the test liquids.

[PE1-30] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Skin Permeation and Crosslinking of a Biological Tissue with Hydrolyzed Product of Gardeniae Fructus**

**Jae-Heon Yang**<sup>o</sup>, Mi-jeong Kim, Nam-Hee Lee, Jin-Woong Lee, Dong-Hoon Min

*College of Pharmacy, Woosuk University,*

For the purpose to treatment of skin disease geniposide and hydrolyzed product of Gardeniae Fructus were studied on skin permeation and crosslinking of a biological tissue. Geniposide was hydrolyzed to genipin by  $\beta$ -glucosidase and the rate of hydrolysis was rapid on the condition of high temperature of medium and high concentration of  $\beta$ -glucosidase. The permeation enhancing effects of geniposide and genipin under cream and gel preparations were tested using Franz type diffusion cell and the skin of hairless mouse. Genipin was showed more lipophilic property and increased absorption ratio through the skin of hairless mouse than geniposide. The crosslinking of keratinous, epidermic and endodermic tissue with genipin under cream and gel preparation were observed using light microscopy. The remaining proportion of geniposide and genipin crosslinked with keratinous, epidermic and endodermic tissue were measured in the cream and gel preparations

[PE1-31] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Micronization of water-soluble pharmaceuticals with a low-temperature Bubble Dryer<sup>2</sup>**

**Seol Eunyoung**<sup>o</sup>, Jung Young Hwan, Kim Jung In, Seo Youn Mi, Chung Hye-Shin, Lee Heeyong

*Pepton Inc. Dept. of DDS, Hannam University, Dept. of Microbiology*

Fine particles of water-soluble pharmaceuticals were prepared using a new micronization method, Carbon Dioxide Assisted Nebulization in a Bubble Dryer<sup>2</sup> (CAN-BD). The process utilized mixtures of CO<sub>2</sub> in aqueous solution at supercritical conditions to form an emulsion. The aerosols were dried with pre-heated nitrogen, and the

drying chamber was operated at near atmospheric pressure. The dry particles were collected on membrane filter at the bottom of the drying chamber. Several processing parameters such as flow rate, temperature, pressure, solid concentration and processing scale were accessed using NaCl, human serum albumin, and granulocyte-colony stimulating factor as model pharmaceuticals. Free flowing micronized particles were obtained with high production yield. These particles can be used in the medical fields such as the effective pulmonary administration of pharmaceuticals and drug formulation research. ["This study was supported by a grant of the Korea Health 21 R&D Project, Ministry of Health & Welfare, Republic of Korea (02-PJ1-PG11-VN01-SV01-0036)."]

[PE1-32] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Anti-gelling Effect of Poly(methacrylic acid, methyl methacrylate) on Cefuroxime Axetil Composition**

**Shim Ji Yeon**<sup>o</sup>, Wang Hun Sik, Kwon Min Chang, Park Jun Sang  
*GL PharmTech Corp.*

Cefuroxime axetil, a broad spectrum antibiotic, has been known to form a gelatinous mass in contact with aqueous media, which could lead to poor dissolution. Therefore, this study was conducted for removing the gelling phenomenon and thereby obtaining a favorable dissolution profile. We have found that the addition of poly (methacrylic acid, methyl methacrylate) could not only inhibit the tendency of cefuroxime axetil to form a gel but also showed the good dissolution profile compared to the formula without poly (methacrylic acid, methyl methacrylate). This effect can be obtained in the range of 15% to 100% based upon the amount of cefuroxime axetil. It is assumed that the anti-gelling effect of poly (methacrylic acid, methyl methacrylate) could be due to preventing cefuroxime axetil particles from bridging each other.

[PE1-33] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Enhanced Thermal Stability of a Novel Human Thrombopoietin Mutein under the Various Temperature Conditions**

**Kim Tae Soo**<sup>o</sup>, Ahn Hye Kyung, Lim Seung Wook, Hong Yeon Joo, Chung Joo Young, Koh Yeon Wook  
*DaeWoong co.Ltd*

DWP40458 is a novel human thrombopoietin mutein with two additional N-linked glycosylation site. The thermal stability of DWP40458 in both solution and lyophilized form was studied in the temperature range of 4 - 50°C, compared with recombinant human TPO (rhTPO). When the aggregation or degradation pattern of DWP40458 and rhTPO solution was characterized by using SDS-PAGE, gel permeation chromatography (GPC) and reverse phase HPLC, it was found that thermostability of DWP40458 was significantly different to rhTPO in the temperature at 25, 30, 40, 50°C. For example, rhTPO was dropped by 2.9%, compared to DWP40458 of 65.0% after 16 days at 40°C. Furthermore, the difference of thermostability between DWP40458 and rhTPO was also observed in lyophilized form with the similar pattern of solution. However, the potency difference between DWP40458 and rhTPO at 50°C was not significant compared to physical instability in the normal mouse model. SDS-PAGE and GPC analysis have demonstrated that DWP40458 and rhTPO show different aggregation and degradation kinetic. Taken together, the results suggest that DWP40458 has enhanced physical thermostability compared with rhTPO.

[PE1-34] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Fibrous composite matrix of chitosan/PLGA for tissue regeneration**

**Shim In Kvong**<sup>o</sup>, Hwang Jung Hyo, Lee Sang Young, Cho Hyun Chul, Lee Myung Chul, Lee Seung Jin  
*Department of Pharmacy, Ewha Womans University, Department of orthopedic surgery, Seoul National University*

Tissue engineering may be adequately defined as the science of persuading the body to regenerate or repair tissue that fail to regenerate or heal spontaneously. In the various techniques of cartilage tissue engineering, the