free microspheres was only formed when EA was used as a organic solvent and showed nice spherical microspheres although surfaces was still rough. Protein contents was lower than our expectations and reason of low protein contents was thought to the easier formation of water channel and pores. Protein release kinetics showed burst release until 2 days and after that sustained release pattern was showed.

[PE1-3] [10/18/2002 (Fri) 13:30 - 16:30 / Hall C]

Preparation of polymeric nanoparticles from hydrophobically modified pullulan for hydrophobic drug carrier

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For the development of a biocompatible nano-scale drug carrier, hydrophilic polysaccharide pullulan was hydrophobized by the conjugation with fatty acid. The synthesized polymers were characterized by the measurements of fourier transform infrared (FT-IR) spectroscopy and 1H-nuclear magnetic resonance (NMR) spectroscopy. In aqueous solution, hydrophobically modified pullulan was self-assembled and structured into the core-shell type nanoparticles. The self-assembling characteristics of the hydrophobically modified pullulan were confirmed by the measurement of fluorescence spectroscopy. Critical association concentration (CAC) was calculated by the intensity ratios of the excitation spectra with various concentrations of nanoparticle suspension. Morphologies of the nanoparticles were observed by the transmission electron microscope (TEM). Particle size distribution was measured by photon correlation spectroscopy (PCS). By the control of the amount of fatty acid, the hydrophobicity changes of the polymers were measured by x-ray diffractometer. The possibility as hydrophobic drug carrier was evaluated with a model drug in vitro.

[PE1-4] [10/18/2002 (Fri) 13:30 - 16:30 / Hall C]

New Formulation of Vitamin A Transdermal Therapeutic System

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Retinol is widely used for skin care, the improvement of the appearance of aging, photo-damaged or oxidatively stressed skin, and especially for the improvement of the appearance of wrinkled skin. Retinol, however, is extremely sensitive to atmospheric oxygen, and easily decomposed by exposure to air. Retinol is commonly formulated as the ointments or creams for cosmetic preparations. However, they have several disadvantages, such as chemical and thermal instability, skin irritation, inflammation by vehicles. in order to reduce these disadvantages, especially, to enhance the stability of retinol in the preparation, it was formulated as the matrix patch using hydrophilic polymer matrix.
PEG 400 and glycerin (50/50) were used as plasticizers in the preparation of retinol patches. The effects of plasticizers concentrations on adhesive force of retinol matrix patch were evaluated using peel adhesion and loop tack. The carbomer matrix containing a total of 2.0-4.0% plasticizers represented the strongest adhesion force. And the effects of hydrophilic polymers on release of retinol were evaluated using Franz diffusion cells fitted with cupropane membrane. The release of retinol from carbomer matrix followed Higuchi's equation. Retinpl in N-AA1 matrix showed the highest release profiles among various hydrophilic polymeric matrix. The effects of stabilizers on stability of retinol were also evaluated at accelerated condition. The degradation of retinol in carbomer matrix followed the Arrhenius equation of first order kinetics. The combination of BHA/BHT was the stabilizer of choice and their effect was concentration dependent. PEG 400/Glycerin (50/50) was the best plasticizers to improve the stability of retinol in carbomer matrix and their effect was also concentration dependent.

[PE1-5] [10/18/2002 (Fri) 13:30 - 16:30 / Hall C]

Preparation and Evaluation of Methacrylate copolymer Microspheres of Piroxicam

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Microencapsulations of piroxicam using the mixture of Eudragit RS with RL or Eudragit L or E or S according to Eudragit RS were carried out. The Eudragit microspheres of piroxicam were prepared by solvent method. Piroxicam and Eudragit polymer were dissoved in methylene chloride and dispersed in 0.5% polyvinyl alcohol solution and solvent evaporated. The average diameters of various Eudragit microspheres were from 40 to 43 ㎛. A good and smooth surface of microspheres observed by SEM were shown in all type of microspheres. The incorporation ratios of piroxicam into the all type of microspheres were higher than 93 %. The dissolution of piroxicam from Eudragit microspheres is not related with the pH of dissolution mediumm but related with the combination of Eudragit types used for preparation. Increase of Eudragit RS portion to Eudragit RL decreased the release of piroxicam. In vivo evaluation of piroxicam from Eudragit microspheres of different polymer types showed that the bioavailability of piroxicam from microspheres were increased about 1.5 times than that of the suspension. The carrageenan induced swelling was reduced rapidly until 24 h and gradually reduced until 72 h from the Eudragit microspheres of piroxicam. while, increased until 24 h and continued until 72 h from the control group.
The similar patterns were observed when the serum enzyme activity was determined following carrageenan induced paw edema. All type of enzyme LDH and CPK was significantly reduced from the Eudragit RS/RL microspheres compare with suspension.

[PE1-6] [10/18/2002 (Fri) 13:30 - 16:30 / Hall C]

Solid Lipid Nanoparticles(SLN) as Controlled Release Subcutaneous Injections of Local Anesthetics

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Local anesthetics are used to reduce pain, but they are so frequently injected to patients. So we prepared lidocaine solid lipid nanopaticles for long acting subcutaneous injection to decrease the number of times of injection. Solid lipid nanoparticles were prepared by spray drying method. First, drug, lipid, plasticizer and surfactant were dissolved in methylene chloride, and we operated spray dryer using this solution at setting value. To evaluate the products we tested the dissolution rate in dialysis sacks, determined the particle size and zeta potential, and performed animal test in mice. It was enough to control the drug dissolution and the particle size was about 30㎛~100㎛ enough to inject into subcutaneous tissue. And spray drying method improved the entrapment efficiency. Almost 100% degrees of the lidocaine was entrapped into nanopaticles. surfactant and plasticizer improved about 20~30% degrees of the burst effect.

[PE1-7] [10/18/2002 (Fri) 13:30 - 16:30 / Hall C]

Ketoprofen-Polyethylene Glycol Conjugate: Pharmacokinetics, anti-inflammatory and analgesic activity

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Ketoprofen (KP), a potent analgesic and non-steroidal anti-inflammatory drug, has some disadvantages such as gastro-intestinal irritation, short half-life (1.5-4 hour) in plasma and low solubility in aqueous solution. In order to minimize these disadvantages, we have recently prepared a KP prodrug, KP-polyethylene glycol conjugate (KPEG750, PEG Mw=750), and investigated its pharmacokinetic behavior, anti-inflammatory and analgesic effect. The change of plasma concentration of free KP with time was studied using rat after intravenous or intramuscular administration of KP and KPEG750 containing equivalent amount of free KP. Analgesic effect of KP and KPEG750 after intramuscular administration was estimated by Tail-flick method using rat. Anti-inflammatory effect after intramuscular administration was measured by carrageenan-induced paw edema in rats given KP and KPEG750 containing equivalent amount of free KP. Pharmacokinetic data showed that KPEG750 was hydrolysed rapidly in