used. In case of their application such as ointments, creams, it is difficult to expect their effects, because they are easily removed by wetting, temperature, movement and contacting. We need to develop the new formulations that have suitable bioadhesion using HPMC and poloxamer 407. Bioadhesive forces of various HPMC gels at 2% concentration was tested using Auto-peeling tester. HPMC-K100M gels showed the best bioadhesive force. As the concentration of HPMC-K100M increased, the bioadhesive forces increased.
The effects of drug concentration on drug release was studied from the prepared 2% HPMC-20% poloxamer 407 gels at 37±0.5℃. As the drug concentration in the gels increased to 3%, the permeation of drug increased, thereafter slightly increased. As the temperature increased, the permeation of drug increased. Activation energy for drug permeation was 3.29 kcal/mol for lidocaine, 4.35 kcal/mol for procaine, and 4.47 kcal/mol for tetracaine.
The enhancing effects through skins, using some kinds of enhancers such as glycols, non-ionic surfactants, bile salts was studied. Among the enhancers used, diethylene glycol showed the most enhancing effects. The analgesic effects was studied using tail-flick analgesimeter. According to the rat tail flick test, 3% drug gels containing diethylene glycol showed the better local analgesic effects.
For the percutaneous delivery of water soluble anesthetics, the enhanced local anesthetic gels containing penetration enhancer and vasoconstrictor could be developed by using the bioadhesive polymers, HPMC and Poloxamer 407.

[PE1-18] [10/19/2000 (Thr) 15:00 - 16:00 / [Hall B]]

Studies on Chitosan strip containning Doxycycline hydrochloride nanopaticles

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In the field of dental therapy, doxycycline is usually first choice because of its broad-spectrum antibiotic. To examine the preparation and evaluation of chitosan strip, nanoparticle strip containing doxycycline hydrochloride, and to examine the antimicrobial activity, dissoultion, and biodegrability of the prepared samples containing doxycycline hydrochloride in vitro. The weight of cast strip containing a 5mg of doxycycline hydrochloride and a 45mg of chitosan polymer was 57.67±0.17mg. In vitro release test, the drug from chitosan strip and nanoparticle strip showed zero order release with initial burst effects, and release rate was showed to 50㎍/mL in first 24 hours. In antimicrobial test, 1 day to 7 days of release experiments showed growth inhibitory activity after 24hrs anaerobic incubation. In vitro degradability showed demolished weight of 93.74 ±0.08% chitosan strip, 82.48±1.29% chitosan nanoparticle strip, 2.47±1.99% polycarprolactione strip(control), respectively, at 7 days($p<0.001$).

[PE1-19] [10/19/2000 (Thr) 15:00 - 16:00 / [Hall B]]

Drug release from cholic acid conjugated glycidyl methacrylate pullulan nanoparticles

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Pullulan is edible and has been extensively used for food and pharmaceutical additives. Pullulan tends to accumulate to the liver to a significant extent compared with other water-soluble polymers, such as poly(ethylene glycol), poly(vinyl alcohol), and dextran. Pullulan is widely under investigation as a polymeric carrier in drug delivery systems. Because of its good biocompatibility, pullulan is also a sutiable polymer to be used for the preparation of hydrogels, which are becoming increasingly important in the biomedical, pharmaceutical, and biotechnological fields. Glycidyl

methacrylate derivatized pullulan(GMA-pullulan)was synthesized by coupling of GMA to pullulan in the presence of 4-(N,N-dimethylamino)pyridine using DMSO as an apretic solvent and characterized by FTIR. Cholic acid is one of the major bile acids. Bile acid is the main product of cholesterol metabolism and biologically the most detergent-like molecules in the body. Since bile acid can self-associate in water and form micelles, it is expected that the amine-terminated GMA-pullulan(GMAP) modified by cholic acid also self-associates to form core-shell structures. In this study, we synthesized cholic acid/amine-terminated GMAP, and prepared core-shell type nanospheres by diafiltration method.

[PE1-20] [10/19/2000 (Thr) 15:00 - 16:00 / [Hall B]]

Effects of adhesives and permeation enhancers on the skin permeation of cisapride

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A transdermal delivery system containing cisapride was developed as a drug-in-adhesive type patches. Effects of the adhesives and permeation enhancers on the skin permeation of cisapride from the prepared patches were evaluated using Frnaz diffusion cells fitted with excised rat skins. To increase the solubility of cisapride in the adhesives, oleic acid was selected as a solubilizer. The permeation rate of the drug through the excised rat skins was dependent on the type of polyacrylate copolymers studied, and Duro-Tak 4098 was showed the highest permeation rate of the drug. Among the permeation enhancers employed, oleyl alcohol resulted in pronounced enhancing effect on the skin permeation of the drug. From these results, we could suggest that the drug-in-adhesive type patch of cisapride may be feasible.

[PE1-21] [10/19/2000 (Thr) 15:00 - 16:00 / [Hall B]]

in vitro Evaluation of Generic Drugs (II) - comparative dissolution test

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In order to be authorized as therapeutic drugs for new drugs or equivalent, materials of bioequivalency test have to be submitted for the review on their safety and efficacy. Whereas generic drugs and drugs on official compendium are waived for submission of those materials. Since not only physical properties such as solubility, particle size, polymorphism, but the additives, manufacturing process are known to influence on the dissolution profiles of active ingredients of dosage forms, comparative dissolution tests are considered as a major mean to predict the bioavailabilities between drug products. Even though similarities in the dissolution profiles does not guarantee the bioequivalancy, most of the oral dosage forms are considered as bioequivalent if their dissolution profiles are similar in various dissolution conditions.
In this study, we intended to examine the dissolution profiles of generic brand and suggest the method of comparative dissolution test for assurance of similar therapeutic effect. Morphine sulfate sustained release tablets and codeine phosphate tablets were compared for dissolution profiles. The brand name products were used as control products whereas generic products were used as test products. After three different lots of brand name products were tested in four different dissolution conditions (test solutions - water, pH 1.2, pH 4.0 or pH 6.8 , 900mL, 50rpm, paddle method), we found that all of test products showed the similar dissolution profiles from control products and fell into the acceptable criteria in our dissolution specification. To secure the qualities of drugs in which the dissolution test does not specified in the drug test method, it is recommended to have more studies on the dissolution tests for the surveillance purpose.