treatment of a variety of inflammatory conditions. Conventionally, for topical use, the drug is formulated in a cream, ointment and gel. We designed an phonophoretic drug delivery system to investigate the TA permeability and the influence of ultrasound application(continuous, pulse), intensity(1.0MHz, 3.0MHz) and frequency(1.0w/㎠, 2.5w/㎠) with 0.1% TA gel. Percutaneous absorption studies are performed in vitro models to determine the rate of drug absorption via the skin. Permeation study using mouse skin was performed at 37℃ using buffer saline (pH 7.4 transcutol solution) as the receptor solution. The pronounced effect of ultrasound on the skin absorption of the TA was observed at all ultrasound energy level studied. Ultrasound was carried out 10 hours. The highest permeation was observed at an intensity 2.5w/㎠, frequency 1.0MHz and continuous output. With pulsed output it was possible to use higher intensities of ultrasound without increasing skin temperature to skin damage. But pulsed output is lower permeability than continuous output.

[PE1-11] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

Release Characteristics of a Poorly Water-soluble Drug Loaded in Solid Dispersion and Its Tablet

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Release characteristics of drug loaded in polymeric solid dispersion and its matrix tablet were investigated. Cisapride was used as a model compound. The drug, solubilizers[surfactant and fatty acid] and polymeric bases[PVP or Eudragit® RS100/L100(1:1 w/w)] were mixed and sprayed using an air atomizing fluid bed spray dryer at 60oC. The obtained solid dispersion(70%) was further processed in tablet. The release characteristics were evaluated using USP dissolution method in simulated gastric fluid (pH 1.2) for 2h and intestinal fluid(pH 6.8) for 4h. The release profiles were highly dependent on the presence of solubilizers, polymeric bases and dosage forms. The release rate increased when the solubilizers were added. However, the release rate was so low(<10%) in intestinal fluid due to poor solubility that effect of solubilizers and polymeric bases were not distinguishable. There was significant difference in the release rate of drug from the solid dispersions. When solid dispersion was further processed into tablet, release rate of drug in gastric fluid from the Eudragit® based solid dispersion was drastically decreased due to it sustaining action. In case of tablet containing PVP based solid dispersion, the release profiles were almost unchanged. As a result, solubilizers showed different behaviors when formulated into solid dispersion and its tablet, depending on the polymeric bases. The current system may provide an alternative to deliver poorly water-soluble drugs for enhanced bioavailability in a controlled fashion. This work was supported by grant No 2000-1-21700-001-3 from the Korea Science & Engineering Foundation.

[PE1-12] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

Prediction method on the effect of transdermal enhancer I: Flux study using model drug and enhancer

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The final goal of this work is to develope a quantitative and/or qualitative methodology, which can predict the effect of various enhancers on the transdermal flux. In order to carry out this task, first of all, we needed flux data which are produced under homogeneous experimental condition. In this paper, we studied the effect of enhancers (2 hydrophobic and 2 hydrophilic) on the flux of model compounds (antipyrene, atropine, benzoic acid, chloraminophenamide, nicotinic acid). These 5 compounds are chosen based on their molecular weight and partition coefficient, which are the most important factor governing the transdermal flux. In all flux experiments, donor side was aqueous solution saturated with each compound. All flux data from the combination of enhancers and compounds will be presented.

Acknowledgement: This work is supported by the grant from Pacific Corporation.

[PE1-13] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

Induction of apoptosis in human ovarian cancer cells by liposomal bcl-2 antisense oligonucleotides

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The anti-apoptotic protein Bcl-2 is prevalent in many solid tumors. Over-expression of the Bcl-2 protein potentially contributes to not only inhibition of apoptosis but resistance to drugs. Liposome is a very useful tool to deliver the antisense oligonucleotides into the cells in culture.
In this study, reverse-phase evaporation method was used for the encapsulation of bcl-2 antisense oligonucleotides in various liposome formulations, such as DPPC/Chol/stearylamine and DPPC/Chol liposomes. The phosphorothioated bcl-2 antisense and scrambled oligo were 5'-AAT CCT CCC CCA GTT CAC CC-3' and 5'-TCC CAC CTC ACC TAC ATC CG-3',respectively. Formed liposomes were characterized in terms of morphology, size and encapsulation efficiency. Results from cytotoxicity, down-regulation of Bcl-2 protein and induction of apoptosis by the liposomal bcl-2 antisense oligonucleotides in human ovarian cancer cell line(SK-OV-3) will also be presented.

[PE1-14] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

Preparation and evaluation of multivitamin emulsion

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The physical and chemical stability of multivitamin o/w emulsion was investigated. Multivitamin emulsion composed of water, soybean oil (10%, v/v), vitamin A, D, E, K, B2, B6, B12 and panthenol. To make a stable o/w emulsion, the egg lecithin (2%, w/v) and glycerin (2.5%, w/v) were used for emulsifier and thickening agent, respectively. The oil in water emulsion system was manufactured by microfluidizer and evaluated the physical and chemical stability. Average particle size and interfacial tension was measured. From the result of interfacial tension tested, critical micelle concentration of the egg lecithin was 0.1% (w/v) and optimal concentration for the preparation of emulsion was 2% (w/v). The mean particle size was about 0.4 um which was suitable for injections. Short-term accelerated stability, as physical stability study, was tested by centrifuging and freeze-thawing the emulsion samples. The additions of vitamins cause the increment of particle size and reduction of physical stability of emulsion. But it is not an enormous problem for stability of emulsion. Also we have performed long-period preservation stability test for the vitamins. All vitamins were analysed by HPLC. The result of storage under 4℃ and dark, at least 12 weeks all vitamins were maintained stable, except for vitamin B12.

[PE1-15] [10/19/2001 (Fri) 09:00 - 12:00 / Hall D]

Enhancing water-solubility of poorly soluble drug, itraconazole with water-soluble polymer using supercritical fluid processing

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