Hydroquinone was the most potent analogue in terms of melanin release inhibition. Arbutin and gentisic acid, on the other hand, showed significant potency in the melanin release assay and the tyrosinase inhibition assay. Results of the different assays seem to reflect different structural requirements for the gentisic acid analogues. Based on the structure-activity relationship study, potent tyrosinase inhibitors with minimum cytotoxicity are being developed.

[PE1-8] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

In vitro release test models for water-insoluble drugs loaded in colloidal carriers

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A suitable model for the estimation of the drug release from nanoparticles has been varied and problematic, especially for the release from lipid nanoparticles containing water-insoluble drugs, due to the difficult particle collection from the release medium. Dialysis membrane has been widely used for the release test from colloidal carrier systems. The amount of drug release from the carriers in normal dialysis diffusion technique was very low typically. The aim of this study was to compare the reverse dialysis technique with normal dialysis technique for testing the release rate of insoluble drug from the colloidal carriers. Lipid nanoparticle dispersion was obtained after homogenization of the mixture composed of a melted lipid, surfactants and the water-insoluble model drug. In reverse dialysis method, a dialysis bag was withdrawn from the sink solution at predetermined time intervals and its drug contents were assayed using HPLC. The amount of drug release in reverse dialysis method was 5-fold higher than that in normal dialysis technique over 10 hrs. Conclusively, bulk-equilibrium reverse dialysis method could be used successfully to estimate the drug release profile in vitro from a submicron emulsion or lipid nanoparticles containing very water-insoluble drug.

[PE1-9] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Lipid nanodispersion for parenteral drug delivery: in vitro characterization

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Lipid nanodispersion (LN) composed of biocompatible lipids and surfactants is an alternative parenteral drug delivery system especially for lipophilic drugs. It has been studied for versatile applications such as oral, parenteral, topical, ocular, vaccine, and peptide drug delivery. The purpose of this study was to produce a novel LN system for intravenous injection using the high pressure homogenization. A melted lipid was dispersed in the aqueous phase containing surfactants, and the mixture was sonicated in order to prepare the coarse pre-emulsion which was an opalescent milky dispersion. LN was obtained after homogenization of the pre-emulsion. The various processing parameters such as homogenization pressure, number of cycles, and the lipid contents were studied to acquire qualified nanoparticles for i.v. injection. The mean diameter and polydispersity (PI) were evaluated with PCS and zetapotential was measured by Zetasizer. The optimum process condition was 10 cycles of the homogenization at 10,000 psi. The lipid contents were appropriate for nanoparticles upto 10% of the lipid. The particle size was in the range of 100-200 nm (PI<0.25), which was very acceptable for intravenous drug delivery. The zetapotential was about -30 mV. The LN formulation obtained was stable physically over 60 days at the room temperature.