aglycone to maintain the desirable level of isoflavones in plasma. Further works that dose response, durational, and interventional studies will be required to contribute to efficiency of soyfoods ingestion for the increase bioavailability of isoflavone that influence the human health.

[PE3-1] [2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function]

Iron succinyl casein encapsulated alginate beads for the treatment of iron deficiency anemia

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Iron deficiency is the most common nutritional problem worldwide. Oral iron supplementation programs have failed because of noncompliance and gastrointestinal toxicity. The purpose of this study was to explore the possibility of alginate gel bead as an oral controlled release system of iron supplements and increase the stability of iron succinyl casein (ISC). Alginate beads containing ISC were prepared by the gelation of sodium alginate with calcium cations. The release profiles of ISC were investigated according to the concentration of polymer, the drug/sodium alginate ratio, the concentration and type of cation, curing time and pH of calcium chloride solution. Calcium content according to the curing time and weight distribution of alginate gel beads were observed. An interaction between alginate and drug was also observed. Stability test was continued for 3 months. Alginate beads were stored inside the media such as calcium gluconate solution. The drug release from alginate gel beads at pH 6.8 showed nearly zero order release rate which was more rapid than that at pH 1.2. Encapsulation efficiencies for ISC were more than 96%. Scanning electron microscopy revealed differences among the types of cation. Alginate beads were moderately stable inside the media. Since alginate gel beads of iron supplements were stable and the release of iron supplements could be controlled by the regulation of the preparation of alginate beads, the alginate beads may be used for a potential oral controlled release system of iron supplement such as ISC.

[PE3-2] [2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function]

Transdermal and topical LMWH delivery from ultradeformable and other vesicles: Characterization and in vitro and vivo permeation studies

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To increase skin permeability of LMWH (Low Molecular Weight Heparin), ultradeformable liposomes were developed. Ultradeformable liposomes were developed by Egg phosphatidylcholine (Egg-PC) and edge activator. Entrapment efficiency, vesicle size and zeta potential of vesicles were determined and characterized for deformability and stability. Transepidermal permeation of LMWH was compared to saturated aqueous control in vitro. The steady-state flux and its maximum time were calculated from the flux curves. Skin deposition was also assessed. The effect of various formulations on the transport of LMWH in hairless mouse skin was investigated. Biologic activity of transdermally delivered LMWH was measured by anti-Xa activity. Entrapment efficiency depended on the concentration of Egg-PC. Vesicle size of ultradeformable, conventional liposomes and ethosome were ranged from 82-85nm, 180-188nm, 83-87nm, respectively. Permeation into epidermal membrane of LMWH-loaded ultradeformable vesicle was greater than those of liposome, ethosome and standard solution. A steady-state flux of LMWH in ultradeformable liposome was 0.252 IU/hr.cm^2. It was a 4.5-fold increase compared to other vesicles. Maximum concentrations of LMWH were 5.72, 1.23 and 2.13 IU/ml, respectively. Skin deposition was increased by 10-fold compared to control. After transdermal administration of LMWH-loaded vesicle in hairless mouse (25 IU/g), the extent of LMWH permeation was dependent of vesicles. Anti-Xa activity increased in ultradeformable liposome. Moreover, transdermal delivery of LMWH resulted in sustained anti-Xa levels in the blood. A peak concentration of 1.2 IU/ml was obtained of 8 hr after transdermal dosing of ultradeformable liposome containing LMWH, exhibiting an absolute bioavailability of 28.7 %. These results suggest that transdermal delivery of LMWH in ultradeformable liposome has the potential to replace injection in humans and also applicable for the topical LMWH formulations.