system. In this study, the better loading efficiency and more spherical particles were shown when using concentration of sodium alginate 1%(w/v).

[PE1-28] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Formulation of PLGA microspheres containing ovalbumin and their immunogenicity in BALB/c mice

Cho SW°, Song SH, Choi SU, Choi YW

College of Pharmacy, Chung-Ang University, Seoul 156-756, Korea

A model protein, ovalbumin(OVA), was entrapped in poly(lactide-co-glycolide) polymers to demonstrate the effect of formulation conditions and the microparticles were administered subcutaneously to female BALB/c mice as a single dose. Microspheres were prepared by a W/O/W multiple emulsion solvent evaporation method and their in vitro characterization was performed. The same microspheres were used in a series of in vivo studies to evaluate the immune response after single subcutaneous injection. Microspheres were characterized for particle size, encapsulation efficiency, morphology, gel permeation chromatography and in vitro drug release in a PBS solution (pH 7.4, 37 ℃). Protein denaturation was evaluated by size exclusion chromatography, SDS-PAGE and isoelectric focusing and circular dichroism. The primary IgG antibody responses obtained with OVA microparticles were compared to those obtained with OVA solution and OVA absorbed to alum. Low loading efficiencies of less than 20% were observed and in vitro release of OVA showed the burst effect in all batches of different microspheres, followed by gradual release over the next 6 weeks. The structural integrity of OVA was unaffected by the formulation process by this method and enzyme-linked immunosorbent assays demonstrated that the single subcutaneous administrations of ovalbunim-loaded PLGA microspheres induced good antibody responses. These microcapsules providing the controlled release of antigens may be valuable in advanced vaccine formulations for the parenteral protein drug delivery.

[PE1-29] [04/21/2000 (Fri) 10:30 - 11:30 / [1st Fl, Bldg 3]]

Effect of temperature and oleic acid on the electrical properties of skin

Oh SY°

College of Pharmacy, Sookmyung Women's University

Electrically, skin is usually represented as a parallel combination of capacitance and resistance. From the stripping experiments, it has been shown that the stratum corneum is mainly responsible for the electrical properties of the skin. The capacitance is believed to originate from the lipid matrix-keratin cell complex of the stratum corneum; the resistance appears to be primarily associated with the ion conducting pores in the skin. These pores are mainly locating at appendages on skin, such as hair follicles and sweat glands, though there are some unidentified pathways whose contribution to the flow of current is dependent on the magnitude of current. Impedance measurements have shown that resistance and/or capacitance may be affected by various factors such as ionic strength of the skin-bathing medium, pH and chemical treatment. The effect of iontophoresis on resistance and capacitance has also been studied.

In order to optimize or maximize the benefits from iontophoresis, it is very important to understand the electrical properties of the skin. In this work, we have measured the electrical impedance of skin as a function of frequency and the Nyquist plot was carried out. Resistance (R) of skin was determined from this plot by multiplying the real part value at frequency (f_c) giving the highest imaginary part value by two. The capacitance (C) was calculated from the equation $C=\tan\Theta/(2\pi f_c R)$, where Θ is shift in phase of the sinusoidal current. Using hairless mouse skin, the effect of temperature (between 5 and 30 ℃) and oleic acid treatment on these properties were evaluated.