Long-term stability and pharmacodynamic effects of PGE1 in urethral injection for erectile dysfunction

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Prostaglandin E1(PGE1), a potent peripheral vasodilator, is used in erectile dysfunction treatment, but very unstable in aqueous conditions due to degradation mechanism by dehydration. It is well known that PGE1 readily undergoes dehydration in both acidic and basic aqueous solutions to produce prostaglandin A1(PGA1) which further isomerizes to prostaglandin B1(PGB1) in alkaline conditions. In this study, long-term stability of PGE1 over 12 months was evaluated and the major degradation products of PGA1 and PGB1 was identified with standards.
The amounts of degradation product, PGA1, was increased, but no trace amount of PGB1 was found at 4℃, the shelf storage condition of 4℃. Semilog plots of residual PGE1 were tried for the stability assessment of urethral injections and temperature dependences of degradation were analysed by Arrhenius plot. Pharmacodynamic effects, including intracavernous pressure(ICP), penile length and duration of erctile response of urethral injection were studied also with cats. The effects were similar to those of intracavernosal injection as control.

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Characterization of Salmon Calcitonin in Microsphere by Capillary Electrophoresis with Off-Line Mass Spectrometry

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The potential of capillary electrophoresis (CE) with off-line matrix-assisted laser desorption-ionization time-of-flight mass spectrometry (MALDI-TOF MS) has been demonstrated for stability and chemical changes of peptides in microspheres during in vitro release test. In this study, PLGA microsphere containing salmon calcitonin (sCT) was prepared using a solvent extraction/evaporation method. CE profiles of sCTs extracted from microspheres during in vitro release test showed the presence of an additional peak in addition to the native sCT. As the time goes on, the additional peak was increased, whereas native sCT was reduced. Using the photodiode array detection of CE, the similarity index of two peaks was 0.921, indicating the additional peak is the derivative of sCT. The fractions of two peaks were then collected for the determination of MALDI-TOF MS. MALDI-TOF mass spectrum of first peak fraction was corresponded to the mass of the native sCT (3436.46 m/z), while the second peak fraction showed two peaks (3494.15 and 3552.16 m/z). These two peaks are consistent with the mass of the complex between sCT and polymer fragments. These results indicate that some interaction between peptide and polymer within the microsphere occurs during the in vitro release test. The combination of CE and MALDI-TOF MS could be applied as a powerful tool for the characterization of peptide in the microsphere with the advantages of speed, high resolution, and small sample consumption.

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Comparison of Salmon Calcitonin Release Properties Between Hydrophilic and Hydrophobic PLGA Microspheres

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