

emerging technology exhibiting high sensitivity, selectivity and speed and may be most powerful tools for this application. In this study, human growth hormone (hGH) has been analyzed by various mode of capillary electrophoresis such as capillary zone electrophoresis (CZE), capillary gel electrophoresis (CGE), and capillary isoelectric focusing (cIEF) to indicate the chemically or biologically oriented variants and the degraded fragments. The two isoforms of hGH with slightly different pI value could be separated and identified by capillary electrophoretic focusing (cIEF), and the isoelectric points and the peak area ratio of the two isoform were confirmed. The impurities produced in aqueous solution during the storage period were characterized by capillary zone electrophoresis (CZE) and followed by MALDI-TOF mass spectrometry. In conclusion, the capillary electrophoretic method capable of identifying the chemically or biologically different variants of human growth hormone was developed and validated for investigation of the quality of hGH as protein pharmaceuticals.

[PE1-16] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **In Vitro Release of Acetaminophen from Mucoadhesive Microsphere Prepared by Poly(acrylic acid)/poly(vinyl pyrrolidone) Interpolymer Complex**

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Mucoadhesive microsphere was prepared by interpolymer complexation of poly(acrylic acid) (PAA) with poly(vinyl pyrrolidone) (PVP) using solvent diffusion method. The loading efficiency of acetaminophen into the microsphere was  $91.3 \pm 6.5\%$ . The release rate of acetaminophen from the PAA/PVP complex microspheres was slower than that from PVP microspheres at pH 2.0 and 6.8. The dissolution of microspheres made of the complex was significantly slower than those made of PVP due to H-bond between PVP and PAA. As a result, the release rate of acetaminophen from the complex microspheres was slower than that from PVP microspheres.

[PE1-17] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Modulation of P-glycoprotein Activity by Flavonoids and Organic Isothiocyanates in Human Uterine Cells.**

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One of the possible mechanisms of multi-drug resistance found in cancer cells is the over-expression of P-glycoprotein (P-gp). Studies have shown that compounds found in plants including vegetables and fruits not only have anticancer activities but may also modulate P-gp activity. The effect of flavonoids and organic isothiocyanates on P-gp activity was studied in human uterine sarcoma cell lines, MES-SA (sensitive) and MES-SA/DX5 (resistant). The accumulation of daunomycin (DNM), a P-gp substrate, was approximately 10 times greater in the sensitive cell as compared to the resistant cells over the entire time course (up to 2 hrs). The positive control, verapamil increased the two hour accumulation of DNM while quercetin decreased that of DNM in the resistant cells. NITC (1-naphthyl-isothiocyanate) showed no effect on the two hour accumulation of DNM. The  $IC_{50}$  values for DNM in the resistant cells was about 20 times higher than that observed in the sensitive cells ( $10.1 \pm 1.7\mu\text{M}$  vs.  $0.58 \pm 0.28 \mu\text{M}$ ). Verapamil reduced the  $IC_{50}$  value for DNM whereas flavonoids (quercetin and fisetin) increased those for DNM in the resistant cells.

[PE1-18] [ 2003-10-11 09:00 - 12:30 / Grand Ballroom Pre-function ]

### **Chitosan surface grafted with fusion protein of FGF-2 and Fibronectin-FGF for tissue regeneration therapy**

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