

The preparation and characterization of solid dispersions on pellets using a fluidized-bed system.

蔡翠敏

Ho HO;Su HL;Tsai T and Sheu MT

Abstract

In this study, solid dispersions of a poorly water-soluble drug, nifedipine, were prepared in hydroxypropylmethylcellulose (HPMC) on sugar spheres using a fluidized-bed coating system and characterized by differential scanning calorimetry (DSC) and dissolution measurements. A mixture of acetone and water (7:3) was found to be suitable as a spraying solution for simultaneous application of nifedipine and HPMC. DSC studies showed that the peak corresponding to the melting point of nifedipine became broadened when nifedipine was incorporated in a solid dispersion with HPMC at both ratios of 1:1 and 1:3. The results demonstrated that dissolution rates were fastest at the lowest nifedipine loading. Furthermore, the dissolution rate of nifedipine increased as more HPMC was added to the solid dispersions. The enhancement in the dissolution rate of nifedipine upon addition of Tween 80 in simulated gastric acid was attributed to the solubilizing effect of Tween 80 on nifedipine. Tween 80 had less influence when nifedipine was incorporated in solid dispersions containing higher fractions of HPMC