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Compatibility Studies of Simvastatin with Levofloxacin Hemihydrate and Various Excipients

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***SUMMARY*. The aim of this study was to study the compatibility of simvastatin (SIM) with levofloxacin hemihydrate (LEV), polyethylene glycol 4000 (PEG4000), polyvinylpyrolidone-K-90 (PVP-K90), carbopol 934 and LEV with carbopol 934. For confirming the compatibility of all ingredients together, differential scanning calorimetry (DSC), Fourier transform infrared spectroscopy (FTIR) and powder X-ray diffraction (PXRD) were used as screening techniques. The results showed that the DSC curves of binary mixtures of SIM-PEG4000 have a strong interaction between them at increased temperatures. DSC thermogram of LEV and carbopol 934 didn't confirm or deny interaction due to overlap of the characteristic peaks at the same temperature range. However, FTIR showed no chemical reaction between SIM, PEG4000 or LEV and carbopol 934 at room temperature.**

RESUMEN. El objetivo de este trabajo fue estudiar la compatibilidad de la simvastatina (SIM) con hemihidrato de levofloxacina (LEV), polietilenglicol 4000 (PEG4000), polivinilpirrolidona-K-90 (PVP-K90), carbopol 934 y LEV con carbopol 934. Para confirmar la compatibilidad de todos los ingredientes, se utilizaron como técnicas de detección la calorimetría diferencial de barrido (DSC), la espectroscopia infrarroja de transformada de Fourier (FTIR) y la difracción de rayos X en polvo (PXRD). Los resultados mostraron que las curvas DSC de mezclas binarias de SIM-PEG4000 tienen una fuerte interacción entre ellas a temperaturas elevadas. El termograma DSC de LEV y carbopol 934 no confirmaron ni negaron la interacción debido a la superposición de los picos característicos en el mismo rango de temperatura. Sin embargo, FTIR no mostró ninguna reacción química entre SIM, PEG4000 o LEV y carbopol 934 a temperatura ambiente.

KEY WORDS: compatibility studies, DSC, FTIR, levofloxacin hemihydrate, simvastatin.

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