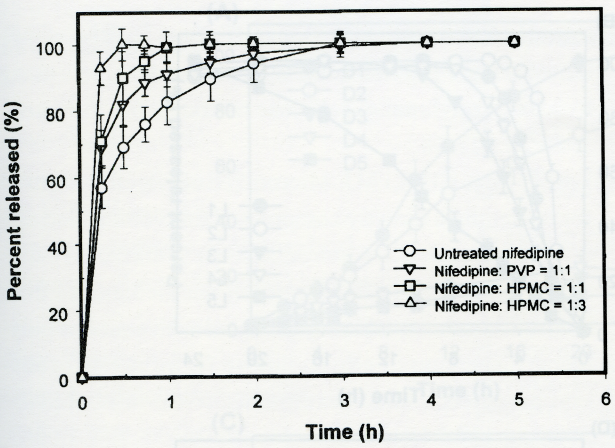

Fig. 1. Dissolution profiles of nifedipine and its solid dispersions. (○) Untreated nifedipine; (▽) nifedipine: PVP (1:1); (□) nifedipine: HPMC (1:1); (△) nifedipine: HPMC (1:3).

nifedipine from the PVP solid dispersion is highly probable due to the retardation of PVP as a result of its higher viscosity.

Figure 3 shows the dissolution of nifedipine from matrix tablets produced from matrix granules consisting of lactose (L1-L5) and nifedipine (Fig. 3A) or its solid dispersions (Fig. 3B-D). It clearly indicates that the dissolution rate of nifedipine was retarded with an increasing weight percent of EC in the formulations of matrix granules irregardless of which form of nifedipine was used (L1> L3 > L5). However, the addition of HPMC in the same matrix formulations resulted in enhancement of the dissolution rate of nifedipine at the same weight percentage of EC (L1 < L2; < L3 < L4). Furthermore, the dissolution rate of nifedipine from matrix granules consisting of lactose increased with the use of the more-soluble form of nifedipine (SDC > SDD). It follows the same order as that presented in Fig. 1, but the dissolution rate of nifedipine from matrix formulations containing solid dispersion samples of SDB (consisting of PVP at a 1:1 ratio to nifedipine) was a little slower than that from the corresponding matrix formulation containing nifedipine alone.

Figure 4 illustrates the dissolution of nifedipine from matrix tablets produced from matrix granules consisting of dicalcium phosphate (D1-D5) and nifedipine (Fig. 4A) or its solid dispersions (Fig. 4B-D). It demonstrates that the dissolution rate of nifedipine was also retarded with an increasing weight percent of EC in the formulations of matrix granules irregardless of which form of nifedipine was used (D1 > D3 > D5). Nevertheless, increasing the weight percentage of HPMC in the same matrix formulations resulted in additional retardation of the dissolution rate of nifedipine, especially at lower weight percentages of EC (D1 > D2; D3 ≥ D4). Furthermore, the dissolution rate of nifedipine from matrix granules consisting of dicalcium phosphate followed the same trend as that described above, but the dissolution rate of nifedipine from matrix formulations containing solid dispersion samples of SDB (consisting of PVP at a 1:1 ratio to nifedipine) was obviously slower than that from the corresponding matrix formulation containing nifedipine alone.

Comparing dissolution rates of nifedipine as shown in Figs. 3 and 4 demonstrates that the dissolution rate of nifedipine from matrix tablets consisting of lactose matrix granules and any form of nifedipine

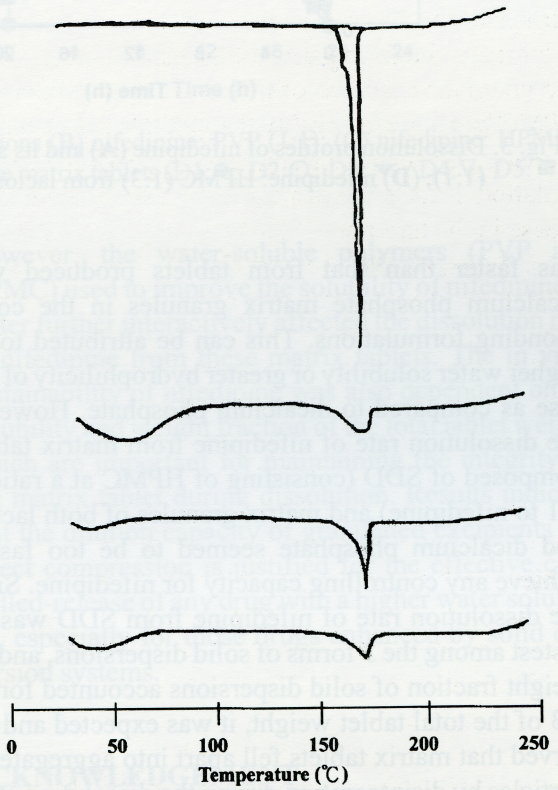

Fig. 2. DSC thermograms of nifedipine and its solid dispersions. (A) Nifedipine alone; (B) nifedipine: PVP (1:1); (C) nifedipine: HPMC (1:1); (D) nifedipine: HPMC (1:3).