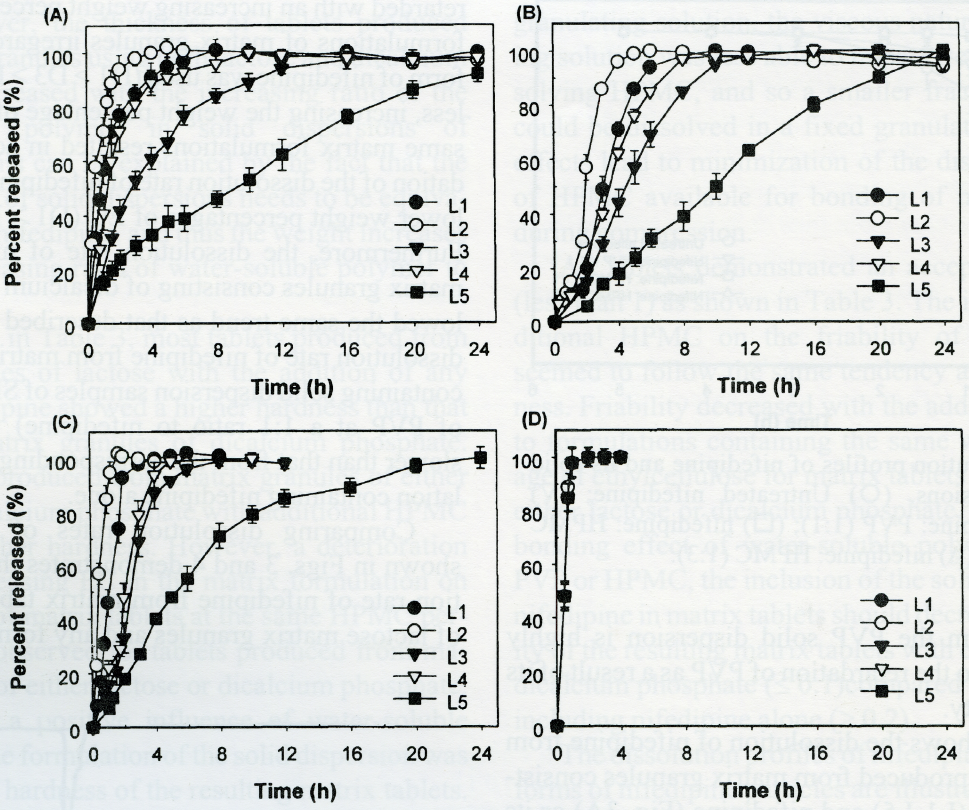

Fig. 3. Dissolution profiles of nifedipine (**A**) and its solid dispersions (**B**) nifedipine: PVP (1:1); (**C**) nifedipine: HPMC (1:1); (**D**) nifedipine: HPMC (1:3) from lactose matrix tablets (L1:●; L2:○; L3:▼; L4: ▽; L5:■).

was faster than that from tablets produced with dicalcium phosphate matrix granules in the corresponding formulations. This can be attributed to the higher water solubility or greater hydrophilicity of lactose as compared to dicalcium phosphate. However, the dissolution rate of nifedipine from matrix tablets composed of SDD (consisting of HPMC at a ratio of 3:1 to nifedipine) and matrix granules of both lactose and dicalcium phosphate seemed to be too fast to achieve any controlling capacity for nifedipine. Since the dissolution rate of nifedipine from SDD was the fastest among the 3 forms of solid dispersions, and the weight fraction of solid dispersions accounted for the 1/3 of the total tablet weight, it was expected and observed that matrix tablets fell apart into aggregates or particles by disintegration during the dissolution stage resulting in larger surface areas available for dissolution. Because of that, the dilution capacity of both matrix granules as a directly compressible matrix excipient should be an influence which needs to be considered in the production of matrix tablets with a desirable control rate.

Since the controlling capacity differs for matrix granules of both lactose and dicalcium phosphate, a desirable release rate of nifedipine from matrix tablets can be further manipulated by using various ratios of these 2 matrix granules. Fig. 5 shows the dissolution rate of nifedipine from matrix tablets produced by mixing various ratios of lactose (L5) and dicalcium phosphate (D5) with a solid dispersion of nifedipine solubilized with HPMC at a ratio of 1:1. It demonstrates that the dissolution rate of nifedipine from matrix tablets produced with D5 granules was the slowest, whereas that produced with matrix granules with D5 and L5 mixed in a ratio of 1:3 was the fastest. It turns out that the dissolution rate of nifedipine from matrix tablets produced only with matrix granules of lactose was not the fastest. As observed, matrix tablets immediately disintegrated into individual particles of original matrix granules for those tablets composed of