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Determination of Nifedipine in Plasma by High-Performance Liquid Chromatography*

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Nifedipine, dimethyl 1,4-dihydro-2,6-dimethyl-4-(2-nitrophenyl)-3,5-pyridinedicarboxylate, is a coronary vasodilator. Pharmaceutical preparations containing nifedipine have been widely used clinically. The therapeutic effects of nifedipine should be related to its concentration in plasma. Thus, for comparison of the bioavailabilities of the preparations and for drug monitoring during therapy, a rapid and sensitive method of assay was required.

Nifedipine is quantitatively oxidized with sodium nitrite to give 4-(2-nitrophenyl)-pyridine homolog. The pyridine homolog is not a metabolite of nifedipine and was found to be separated from plasma substances by normal phase chromatography on silica gel.

A high-performance liquid chromatographic method for the determination of nifedipine through its conversion to the pyridine homolog was established. The method is simple, sensitive and reliable and permits the accurate determination of the drug in plasma at concentrations as low as 2 ng/ml.

The plasmas of dogs given nifedipine orally were analysed by the present method. Bioequivalency of nifedipine-containing capsules (Adalat) of different lots were demonstrated in dogs.

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