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"Synthesis and smooth muscle Calcium channel antagonist effect of Alkyl, Aminoalkyl 1,4-Dihydro-2,6-Dimethyl-4-Nitroimidazole-3,5 Pyridine Dicarboxylates "

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Abstract:

The discovery that 1,4-dihydropyridine (DHP) class of calcium channel antagonist inhibits the Ca^{+2} influx represented a major therapeutic advance in the treatment of cardiovascular diseases such as hypertension, angina pectoris and other spastic smooth muscle disorders. A novel class of calcium channel antagonist of flunarizine containing arylpiperazinyl moiety has recently been reported. It was therefore of interest to determine the effect that selected C-3 substituents contained amino alkyl and arylpiperazine, in conjunction with a C-4 1-methyl-5-nitro-2-imidazolyl substituents on calcium channel antagonist activity. The unsymmetrical analogues were prepared by a procedure reported by Meyer in which 1-methyl-5-nitro-imidazol-2-carboxaldehyde was reacted with acetoacetic esters and alkyl 3-aminocrotonate. In vitro calcium channel antagonist activities were determined by the use of high K+ contraction of guinea pig ileal longitudinal smooth muscle. All compounds exhibited comparable calcium channel antagonist activity (IC50=10^-9 to 10^-11 M) against reference drug nifedipine (IC50=2.75±0.36 x 10^-10 M).

Keywords:

Ca^{+2} channel antagonist ، DHP ، Arylpiperazine

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