The effects of nifedipine and verapamil on antigen-induced bronchoconstriction in dogs.

The effects of calcium channel blockers, nifedipine and verapamil (i.v. and aerosol), were investigated in beagle dogs natively allergic to Ascaris suum antigen. Control exposures to an aerosol of Ascaris antigen provoked significant bronchopulmonary changes, i.e., increases in pulmonary resistance (RL) and decreases in dynamic lung compliance (CDYN). Pretreatment with either nifedipine or verapamil (200 micrograms/kg, i.v.) provided significant inhibition in the RL responses to Ascaris antigen (P less than 0.015) while neither agent significantly affected CDYN changes. When administered as an aerosol, verapamil (1.0%; 10 breaths) significantly inhibited both the RL and CDYN responses to Ascaris antigen (P less than 0.05), whereas a similar concentration of nifedipine was without effect. Resting basal levels of RL and CDYN were unaffected by either the i.v. route or by aerosols of either nifedipine or verapamil. These results suggest that calcium channel blockers may have beneficial effects against allergen-provoked bronchoconstriction; however, differences appear to exist in the choice of agent, route of administration and site of action.