

ADENOSINE ENHANCES THE RELAXING INFLUENCE OF RAT AND BOVINE RETINAL TISSUE.

N. Maenhaut, K. Boussery, C. Delaey and J. Van de Voorde

Department of Pharmacology, Ghent University, Ghent, Belgium

Retinal tissue from different species continuously releases an as yet unidentified retinal relaxing factor (RRF) lowering tone of isolated arteries. The potential influence of adenosine on this relaxing influence was investigated using isometric tension recording of isolated arteries. The presence of bovine retinal tissue enhanced the vasorelaxing effect of adenosine on isolated bovine retinal artery. Neither a NO-synthase inhibitor (nitro-L-arginine, 0.1 mM), a cyclooxygenase inhibitor (indomethacin, 10 μ M) or an epoxygenase inhibitor (miconazole, 10 μ M) influenced the enhanced vasodilating effect of adenosine on retinal arteries in the presence of bovine retinal tissue. On the other hand, when the retinal arteries were contracted with 120 mM K⁺, adenosine no longer induced relaxation of the preparation with bovine retinal tissue. This is in line with the concept that adenosine enhances the influence of RRF. However, experiments using a bioassay setup for RRF gave no evidence for an increased RRF-release from the retina, nor for an increased RRF-sensitivity of the retinal artery in the presence of adenosine. In isolated rat carotid artery adenosine elicited no relaxation. A small relaxation is observed in the presence of rat retinal tissue, but not in the presence of porcine retina. The fact that adenosine elicits relaxation of rat carotid artery in the presence of rat but not porcine retinal tissue indicates species differences.

In conclusion, our findings indicate that adenosine potentiates the relaxing influence of bovine retinal tissue on bovine retinal artery. This effect is species dependent. Neither NO, cyclooxygenase metabolites or epoxyeicosatrienoic acids seem to be involved in this enhanced vasorelaxing response. The involvement of the RRF can not be excluded.