The effect of harmaline on force of contraction of the rat isolated atrium

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In rat isolated right atria, beating spontaneously at 30°C, harmaline 8.3 × 10-5 M slowed atrial rate and enhanced force of contraction. The velocity of development of tension (dT/dt) increased and time to peak tension was lengthened. Electrical drive of otherwise quiescent left atria showed that (1) within the range of change of rate induced by harmaline the reduction of frequency of stimulation increased dT/dt and peak tension developed, and (2) at a constant rate of stimulation harmaline produced a prolongation of time to peak tension and an enhancement of peak tension. We concluded that two mechanisms are responsible for the inotropic action of harmaline on rat atrium: (1) an increase in dT/dt due to the lengthening of the interval between beats; (2) a direct action of harmaline on the processes responsible for atrial contraction, which determines a lengthening of time to peak tension.