

## References

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## The effect of atenolol on the discharge of sympathetic efferent nerves in the anaesthetised cat

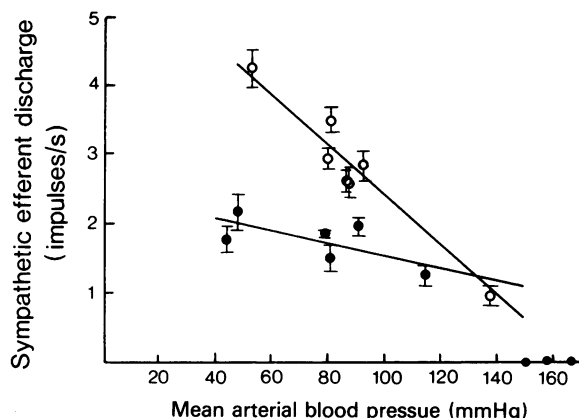
EVELYN M. SCOTT  
(introduced by J. CONWAY)

*Department of Physiology, University of Manchester*

The mechanism of action of  $\beta$ -adrenoceptor blocking drugs in hypertension remains obscure. A central action was suggested by Lewis & Haeusler (1975) who demonstrated that propranolol reduced sympathetic efferent discharge. The effect of the  $\beta$ -adrenoceptor antagonist atenolol, which has a low lipid solubility and therefore is not thought to cross the blood brain barrier (Barrett, 1977) on sympathetic efferent discharge (SED) was investigated.

Cats were anaesthetised with  $\alpha$ -chloralose (80 mg/kg i.p.) and artificially ventilated. Temperature and the pH,  $p\text{CO}_2$  and  $p\text{O}_2$  of the arterial blood were maintained within normal limits. Recordings were made of the discharge from few-fibre preparations dissected either from the lumbar trunk or the renal nerves. The mean arterial blood pressure in six cats during the control period was  $105 \pm 6$  mmHg (mean  $\pm$  s.e. mean) and the SED was  $12.4 \pm 4.4$  impulses/s. Blood pressure was raised or lowered by the administration of phenylephrine (1-4  $\mu\text{g/kg}$ ) or glyceryltrinitrate (2-20  $\mu\text{g/kg}$ ) and the SED was recorded under steady state conditions over a range of widely differing blood pressures. Atenolol (3 mg/kg i.v.) was administered when the blood pressure had returned to initial levels. Thirty minutes later the mean blood pressure was reduced to  $98 \pm 7$  mmHg ( $P < 0.01$ ) and in spite of this the SED was reduced to  $4.9 \pm 1.5$  impulses/s ( $P < 0.05$ ). The blood pressure was again artificially raised and lowered and the SED recorded over the same range of blood pressures as before. Changes in SED are shown in Figure 1. The responses of fibres from the renal nerves and the lumbar trunk were similar.

It is concluded that atenolol reduces the SED. A similar conclusion has recently been reached by



**Figure 1** Effect of atenolol on SED recorded from the lumbar trunk of a cat over a range of widely differing blood pressures. (○) show measurements made before the administration of atenolol (3 mg/kg) and (●) at least thirty minutes after administration of atenolol. Each point shows the mean of between 6 and 14 measurements and the vertical line represents s.e. mean.

Friggi, Chevalier-Cholat & Bodard (1977). In addition atenolol may also attenuate the reflex response to fluctuations in blood pressure and this may play a role in its antihypertensive action.

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