THREE DISTINCT VASOMOTOR MECHANISMS ACTIVATED BY DMPP

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Intraarterial injection of 20 to 100 μg of dimethylphenylpiperazinium (DMPP) into the perfused hindquarters produced vascular response in the perfused area in autoperfusion preparation of the dog. In 2 cases a small rise followed by a fall, and in 6 a moderate rise followed by a slight fall were observed, the hypotensive component tending to be less prominent after transection of the sympathetic chains at L5-L6.

i) Treatment of the animal with β-TM 10, guanethidine or bretylium in 5 to 10 mg/kg, i.v., reversed the pressor effect of i.a. DMPP. ii) Treatment with antimuscarinic doses of atropine or scopolamine strikingly enhanced the pressor effect or reduced the depressor component of DMPP given into the perfused area. iii) Furthermore, a similar enhancement of the pressor effect or reduction of the depressor component of i.a. DMPP was exerted by tripelennamine or D-chlorpheniramine in doses reducing the hypotensive effect of histamine. These 3 distinct mechanisms activated by DMPP in the perfused area are shown in Fig. 1, which also indicates the response induced by the

![Graph showing vascular response to DMPP challenge](image)

Fig. 1. In autoperfusion of dog hindquarters, distal electrostimulation (E) of the divided lumbar sympathetic chains and i.a. DMPP (D) are serially challenged by β-TM 10, tripelennamine (PBZ) and atropine (Atr).
electrostimulation of the distal stumps of the cut lumbar sympathetic chains being affected \(^1\) in a parallel fashion to that observed in case of i.a. DMPP.

These findings support that at least 3 distinct vasomotor mechanisms are involved in the so-called "sympathetic chain", and that DMPP is likely to stimulate the ganglionic structures involved in these mechanisms, although the present study has not localized these structures in the perfused area and we should always be aware of unspecificity of pharmacological tools.

The present results are consistent with a hypothesis that the active reflex dilatation in dog's hindquarters may be mediated by a mechanism sensitive to antihistaminic agents and insensitive to antimuscarinic or adrenergic beta blocking agents \(^2\).

REFERENCES


PULMONARY EDEMA INDUCED BY EPINEPHRINE INFUSION IN RATS

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In order to study the mechanism and to single out the protective measures against acute pulmonary edema, experimental procedure for producing pulmonary edema by epinephrine infusion in rats was examined.

Male albino rats of Wistar strain, weighing 200 to 300 g, were purchased and housed under controlled conditions for at least two weeks. The animal was anesthetized with pentobarbital, 40 to 50 mg/kg, i.p., and fixed on its back. Polyethylene endotracheal tube was attached, venous cannula for injection was inserted into the femoral vein, and arterial cannula into the femoral artery for recording blood pressure through a high pressure transducer. Heart rate was recorded with a tachograph. Respiratory movement was traced by means of a costalateral pneumograph connected to a low pressure transducer.

1-Epinephrine solution, 50 or 100 \(\mu\)g/ml, pH 4 to 5, was infused intravenously at a rate of 0.12 ml/min. When froth or pink liquid appeared in the tracheal tube, the infusion was discontinued and the animal was killed 3 minutes later for examination of the lungs; otherwise, the infusion was terminated after full term of 10 minutes and the animal was killed 5 minutes later. The lungs were removed after exsanguination via the cut abdominal corts, and the attached tissues were trimmed away for gross observation and weighing. The weight of lungs was expressed as a value, EI (edema index) defined as 10,000 \times\) lung weight divided by body weight.

Epinephrine infusion produced a sustained rise in blood pressure with initial bradycardia and usually depressed respiratory amplitude throughout the period of infusion in animals developing no pulmonary edema. On the other hand, downhill changes superimposed by big fluctuations were