There is evidence for a high noradrenaline content in the vas. The above findings make it necessary to reconsider the role of noradrenaline in this tissue; besides vasomotor control, its function here might be to inhibit the motor transmission.

Similar results with phenoxybenzamine were obtained in rabbit vas deferens.

Adrenaline uptake mechanisms in the rat uterus

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The motor response to adrenaline in the presence of isoprenaline in the pregnant and oestradiol-treated uterus is blocked by desipramine and other uptake-blocking agents (Tothill, unpublished). No motor response occurs in the ovariectomized or dioestrous rat uterus. As this response to adrenaline may therefore be associated in some way with uptake mechanisms these were investigated in the uteri of late pregnant and ovariectomized rats.

Sprague Dawley rats weighing about 200 g were ovariectomized and left for 3 weeks before the experiment. Pregnant animals were used on the twentieth day after mating. Animals were killed by a blow on the neck and the uterus was removed. Strips of the pregnant uterus weighing about 50 mg and horns of the uteri from ovariectomized rats weighing about 40 mg were incubated at 37° C for 30 min in mammalian Ringer solution with ^{14}C-adrenaline. After 30 min the tissue was removed, blotted and weighed. The tissue was placed in vials containing 1 ml of distilled water with 1 ml M hyamine hydroxide in methanol, hermetically sealed and placed in an oven at 60° C for 3 h. The resultant clear solution was counted in a liquid scintillation counter.

Adrenaline uptake was studied at concentrations ranging from 5 ng/ml to 20 μg/ml. In uteri from ovariectomized rats the uptake per gramme of tissue was never more than twice the concentration in the incubation fluid expressed as ng/ml, but in pregnant uteri this was usually less than half. The greatest difference of uptake between these two hormonal states occurred at low concentrations of adrenaline (5–100 ng/ml). Desipramine (1 μg/ml), an inhibitor of uptake 1 (Iversen, 1965), reduced the uptake of adrenaline (100 ng/ml) by 23·6% ($P<0.025$) in uteri from ovariectomized rats but had no effect in the uteri from pregnant rats.

Desipramine reduced the uptake of adrenaline (5 ng–5 μg/ml), but not above 5 μg/ml, in the ovariectomized rat uterus. Metanephrine (20 μg/ml), an inhibitor of uptake 2 (Burgen & Iversen, 1965), reduced by 5·6% the uptake of adrenaline in the uteri of ovariectomized rats at concentrations of 10 μg/ml ($P<0.5$) but had no effect on uptake into uteri from pregnant animals. The uptake of adrenaline at low concentrations which could be blocked with desipramine was probably accounted for by uptake into sympathetic nerves, since they are usually associated with uptake 1. During late pregnancy the uterus has increased in bulk by about 20 times, so that neuronal uptake per gramme of tissue might not be detectable. It seems possible that there may be only one main uptake mechanism in the rat uterus and its relation to the motor response is not clear.

REFERENCES

BURGEN, A. S. V. & IVERSEN, L. L. (1965). The inhibition of noradrenaline by sympathomimetic amines in the rat isolated heart. *Br. J. Pharmac. Chemother.*, **25**, 34–49.

IVERSEN, L. L. (1965). The inhibition of noradrenaline uptake by drugs. *Adv. drug Res.*, **2**, 5–23.