LETTER TO THE EDITOR

ACTION OF PILOCARPINE ON THE RAT BLOOD PRESSURE

The action of pilocarpine on blood pressure is complex. Trendelenburg (7) has reported that pilocarpine and histamine produce pressor response in the cat, by a similar mechanism. It was considered of interest to study the mechanism of action of pilocarpine on rat blood pressure.

Healthy male mongrel albino rats weighing 200-325 *gm* were anaesthetised with urethane (1.5 *gm/kg.* i.p.). Blood pressure was recorded by Statham Transducer and Grass Polygraph (Model-4). Carotid artery was cannulated to record the blood pressure and the opposite jugular vein was cannulated for injecting the drugs. All drugs except reserpine were injected intravenously.

Pilocarpine nitrate, 0.1 *mg/kg* produced a fall followed by a rise in blood pressure in albino rats. Similar biphasic action on the cat blood pressure has been reported earlier by Root (4). Ganglion blocking agents convert this biphasic response to pressor response in the cat (4). During the present study 0.1 *mg/kg* of pilocarpine was injected to six rats 10-30 minutes after hexamethonium (10 *mg/kg*). The pilocarpine response, however, remained unaffected by hexamethonium.

Hemicholinium (4 *mg/kg*) converted the biphasic action to pilocarpine into a pressor response by blocking the depressor phase. Reserpine pretreatment (2.5 *mg/kg.* i.p. for two days) abolished the pressor phase of pilocarpine action. Depressor response to pilocarpine in reserpine pretreated rats was also blocked by hemicholinium. Bretylium tosylate, an adrenergic neurone blocking agent, given 10 minutes b fore pilocarpine also blocked the pressor phase of pilocarpine action. Pressor as well as depressor phases of pilocarpine response were blocked by phenoxybenzamine (10 *mg/kg*) and atropine (1 *mg/kg* in divided doses). Atropine was injected 10 minutes and phenoxybenzamine was injected 30 minutes before pilocarpine.

It may be presumed that the depressor response to pilocarpine is due to release of acetylcholine as this is not only blocked by atropine but also by hemicholinium an inhibitor of acetylcholine synthesis. The blockade of depressor phase by phenoxybenzamine may be due either to a lowering of basal blood pressure or to a specific action. Phenoxybenzamine is a calcium antagonist (5&6). Calcium plays an important role in excitation release coupling of acetylcholine (2). The pressor action of pilocarpine in the rat is presumably due to liberation of catecholamines as it is blocked by phenoxybenzamine, bretylium and reserpine. Atropine also blocks the pressor response to pilocarpine in the rat. It has been reported that

in the dog and the cat receptors site of pilocarpine on the sympathetic ganglion (3) and adrenal medulla (1) are blocked by atropine. In the rat pilocarpine may also be releasing catecholamines by acting on the atropine sensitive receptors on the sympathetic ganglion and adrenal medulla.

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