CURRENT LITERATURE


Serotonin (enteramine, 5-hydroxy-tryptamine, 5-HT) has been infused intravenously in anesthetized rats weighing between 200-300 gm. brought into osmotic diuresis with mannitol and the antidiuretic effect noted. Serotonin has been found to be antidiuretic in doses more than 5 μg./kg/min. The effect has been found to be dependent on decreased glomerular filtration and largely independent of the changes in the blood pressure. Lysergic acid diethylamide and bromo-lysergic acid diethylamide have been tried for their anti-serotonin effect. They prevent but do not reverse the renal and arterial pressure effects of serotonin. The physiological and clinical implications of the finding is discussed.


Blood flow was measured in the hind paw of the dog by directing blood from the femoral artery through an electromagnetic flowmeter into the dorsalis pedis artery. Epinephrine and arterenol injected intra-arterially, exerted potent vasoconstrictor effects, the former being slightly but not significantly more potent than the latter when equimolecular doses were used. Isoproterenol and methacholine caused weak dilator responses. Ischaemia did not induce any reactive vasodilatation. Stimulation of the sympathetic chain at approximately the level of the first sacral vertebra induced potent vasoconstriction. All constrictor effects were blocked by 10 mgm. of phenoxybenzamine (dibenzylamine) given intraarterially without affecting appreciably the dilator responses to either methacholine or the isoproterenol. This shows that this vascular bed contains potent alpha-constrictor receptors but that adrenergic and cholinergic dilator receptors are minimally present. No evidence was obtained for the presence of cholinergic autonomic dilator fibres.

The direct effect of growth hormone on liver glycogen and blood sugar levels of diabetic rats has been studied. Female albino rats between 180-200 gm. made diabetic by injection of alloxan (125 mgm/kgm. body weight) have been chosen. A single injection of growth hormone caused glycogen retention or storage in the liver coupled to a lowering of blood sugar.


Female rats, made hypertensive by bilateral renal encapsulation were used. Renal encapsulation did not affect either the regularity or the length of the oestrous cycle of rats. The intake of sodium chloride was increased above prepregnancy levels in both control and hypertensive rats during pregnancy. A decline of the systolic blood pressure was noted in both control and hypertensive rats in the last week of pregnancy, the fall being greater in the hypertensive rats. There was no striking difference between litter sizes and weights in the two groups of rats, but the survival time and growth rate showed striking differences. The survival time of the litters of hypertensive rats was much less than that of the control. The growth was also retarded. After weaning, the young of hypertensive rats made up the weight deficiency and grew normally.

The Effect of Dehydration, Starvation and Pitressin Injections on Thyroid Activity in the Rat. by Seymour Reichlin. (1957) Endocrinol., 60, 470-487.

The effect on thyroid function of dehydration and of pitressin injection has been studied. Water deprivation led to progressive decrease in thyroidal I$^{131}$ release rate, to thyroid gland atrophy and to lowered serum-preceptible iodine, but was still capable of responding to exogenous thyrotrophic hormone.
Injection of 5 μ of pitressin exerted no significant effect on the one hour thyroid uptake of I 131. Starvation led to a prompt decrease in thyroid activity within 24 hours. Iodine release rates were more rapid at lower environmental temperatures even in starved animals. It is concluded that severe dehydration brings about a greater release of ACTH than does starvation, while the changes in the thyroid function appear to be related to level of food intake rather than water deprivation.


The subcutaneous administration of cadmium salts (chloride and lactate) to male rats and mice led to acute destruction of the testes with destruction of the seminiferous epithelium and interstitial tissue. These changes in turn evoked castration phenomenon, but the atrophied accessory organs retained the ability to react to testosterone propionate. Proliferation of fibroblasts in the interstitial spaces and new blood vessels formed under the albuginea within 20 days after the injection of Cadmium. This was followed by gradual return of endocrine function but the spermatogenic epithelium did not regenerate even in 133 days. The simultaneous administration of large dose of zinc salts protected the testes completely against the cadmium damage.

A method for screening compounds for adrenocortical activity using the resistance of mice to the effect of cold by D'Arcy, P. F. (1957), 15, 9-16.

Adrenalectomy in the mouse causes a decrease in its resistance to the effects of cold which can be completely restored by the administration of cortisol acetate and other 11-oxygenated corticosteroids. A linear relationship exists between the survival time of adrenalectomized mice expressed to cold and the logarithm of the dose of cortisol acetate or other corticosteroids injected. The assay using this finding is simple and easier to perform than assays using either the response of the eosinophils or of liver glycogen in mice. The sensitivity is less than that of the latter. Its precision is less than that
of the glycogen assay but of same order as that of the eosinophil assay. Compared with the similar assay using rats it is cheaper to perform, requires less time and has a similar order of precision and sensitivity. The assay depending upon the resistance of mice to cold provides a simple and rapid mean of screening compounds for adreno-cortical activity.

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The blood clotting factors in saliva have been studied. Antihaemophilic, Christmas factor and platelet like activities have been demonstrated. Saliva has been found to be active in the thrombin generation test but ineffective in the thromboplastin generation test. No difference in the concentration of the factors was found in specimens obtained from normal subjects, haemophilic patients and patients with Christmas disease and other diseases. The implications of these findings have been discussed.

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The fate of radioactive glucose labelled with C\(^14\) introduced into the lumen of intestine of dog has been studied. Techniques have been described for studying the fate of C\(^14\) labelled glucose absorbed from the loop of intestine. It was found that 70–80 per cent of the glucose disappearing from the intestine is accounted for as the glucose in the mesenteric venous blood, 7–17 per cent as lactic acid, and insignificant amounts as carbon dioxide, alanine and pyruvic acid. The results have been discussed in relation to the theories of glucose absorption and compared with those obtained with intestinal preparation in vitro.

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The effect of nicotine and of acetylcholine upon spinal reflexes has been determined by injecting these drugs directly into the arterial system supplying the spinal cord of the cat. Nicotine and acetylcholine cause a transient depression of the monosynaptic reflexes of flexor and extensor motoneuron together
with polysynaptic reflexes. This depression may be due to the transient excitation of Renshaw cells which are known to be cholinergically activated from the motor axon collaterals and which exert a powerful inhibitory action on motoneurons. Adrenaline, nor-adrenaline, histamine, succinyl choline, methyl choline, carbaminocholine and sodium ATP have little or no action on spinal reflexes, but adrenaline and nor-adrenaline may have a potentiating action after a rather long latency period, 8—10 sec. A device for rapid intra-arterial injection is described.


The pharmacological properties of anileridine have been investigated in comparison with morphine and meperidine in rats and dogs. It is potent analgesic with high oral activity and relatively mild side reactions. The compound approaches the analgesic potency of morphine. In dogs it is equally effective when given orally or subcutaneously. It has got prompt onset of action and long duration of analgesia. It is a good antitussive against experimental cough in animals. In addition it has mild anticholinergic and antihistaminic properties similar to those of meperidine. It successfully antagonizes the emetic effects of apomorphine and morphine in dogs. The side reaction are similar but considerably milder than those of morphine and meperidine. It does not produce constipation in animals. Studies of toxicological properties show that it is well tolerated by dogs, cats, rabbits and rats.


The physiological effects of increasing doses of mescaline, of chronic administration and of the influence of certain drugs on the action of mescaline have been investigated in rats. The intraperitoneal LD50 was found to be 370 mg./kgm. body weight. Flexor convulsions and respiratory arrest were the terminal events. Bradycardia and hypoglycaemia occurred after injection of varying doses of mescaline. Fasting and epinephrine have a protective action against this action. Mescaline has an analeptic effect against the usual anesthetic doses of pentobarbital. Insulin potentiated the hypoglycaemia and decreases the LD50 of Mescaline. No tolerance was noted to the hypoglycaemia and bradycardia produced by an injection of mescaline. The possible mode of action of mescaline is discussed.

Isonicotyl hydrazide is a substance for which no toxic effects are known except for convulsions which appear in lethal doses. Experiments were carried out with depressive drugs to prevent death in INAH treated rabbits. Only paraldehyde proved effective. This drug given orally 20 minutes before IHNH administration prevented death in rabbits receiving more than one LD50 dose of INAH. By using 2 LD50 or more INAH, doses, a partial protection was also obtained. In other cases where various depressants and ornithine were used no significant differences were observed.


Hydrochloride of benzilic acid diethylaminoethylester known as Benactyzine, NFN, has recently been used in the treatment of the psychoneuroses. Because of its possible application in the treatment of abnormal behaviour, these workers studied the effects of the drug on the electrical activity of the brain of experimental animals. They found that the drug is a powerful depressant of reticular formation. For that reason a pilot clinical study was undertaken on patients with Parkinsonism symptoms. Improvements were noted with daily doses of 3.0-9.0 mg. and optimal results were obtained with 15.0-20.0 mg. daily. A further increase of dosage to 30-40 mg. per day reduced the efficacy of the drug.

Some derivatives of phenothiazine have been investigated for their ability to inhibit apomorphine induced vomiting. The most promising of these was proclorperezine. The ability of proclorperezine to inhibit vomiting due to apomorphine and hydergine and its ineffectiveness against vomiting due to copper sulfate and cedilanid were similar to actions of chlorpromazine. The sedative action was also similar to that of chlorpromazine.


Anticoagulant therapy with Sintrom in forty-two patients have been studied, control being maintained with the standardized clotting time. Sintrom produced therapeutic prolongation of the SCT after an induction period of 4.3 days. No haemorrhagic accidents or thromboembolic complications were noted. Sintrom proved to be a satisfactory oral anticoagulant for short term therapy and could be easily and adequately controlled by the standardized clotting time.


Intracerebral injections of neostigmine methyl bromide, eserine sulfate and 0.9% sodium chloride solution were made in three groups of adult mice in order to get an idea about the possible sites of central activity of eserine and neostigmine. There was piloerection, lacrimation, micturition, defaecation and generalized muscle spasm and tremors. It was followed by a state of depression. With eserine, besides the effects obtained with neostigmine, there were running movements and alternate tonic and clonic seizures. The central sites of action producing these peripheral effects have been discussed.

Pharmacological studies have been made of Tetramine, a resin formed by the interaction of sulfamidic and formaldehyde, which was responsible for the outbreak of the several poisonings by 'Crinex wool'. The LD50 has been determined. Tetramine exhibited no major activity on peripheral nerve, skeletal muscle, or the neuromuscular junction and no perceptible autonomic activity on spleen, kidney, intestine or bladder. The convulsive activity has been shown to lie entirely in the brain stem. Absorption studies indicate that Tetramine is rapidly absorbed from the mucosa of pharynx and oral cavity; it appears to be metabolized at the rate of 1/4th the LD50 per day approximately.


Ventricular fibrillation has been studied by driving the ventricles of the isolated rabbit heart electrically and observing whether fibrillation persisted after stimulation was stopped. The hearts were perfused by solutions of different ionic composition and the proportion of hearts in which persistent fibrillation was seen was determined for each solution. The proportion was controlled from 0 to 100 per cent according to the amount of K+, hearts fibrillating spontaneously in 25 N K+. A similar study was made by varying Ca++. Fibrillation was arrested by ATP and prolonged by dinitrophenol. Fibrillating hearts lost more K+ than when they were not fibrillating. Fibrillation appeared to depend on disturbances of metabolic processes concerned with ion movement.