(communication to Dr. I. A. Galloway), who have used the technique for the titration of antibody in the sera of cattle convalescent from infection with foot-and-mouth disease.

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## 5-Hydroxytryptamine in Acute Inflammation

In the course of examining inflammatory exudate for substances capable of acting as mediators of increased capillary permeability it was found that in pleural exudates collected from rats within an hour of intrapleural injection of 0·1 ml. turpentine there were significant amounts of 5-hydroxytryptamine. Since then, similar exudate collected 30 min. after injury has been found to contain 1–3 μgm. 5-hydroxytryptamine/ml. One hour after injection this value has fallen to 0·2 μgm./ml. or less. 30-min. exudates contain less than 0·5 μgm. of histamine.

5-Hydroxytryptamine is generally known as a vaso-constrictor; but in view of the above finding it was tested for its effect on capillary permeability in the rat. Using the intravenous trypan blue technique it was found that in concentrations of 100 μgm./ml. or more 5-hydroxytryptamine constricted vessels but that it caused marked increase in capillary permeability between 10 and 1 μgm./ml. Thus in the rat 5-hydroxytryptamine is about 100 times more potent in this respect and on a weight basis than histamine. In addition, Rowley and Benditt[3] observed that œdema followed the injection of 5-hydroxytryptamine (1 μgm./ml.) into the paws of rats. These authors have suggested that liberation of 5-hydroxytryptamine may be the cause of œdema following injection of egg-white into rats, and that mast cells might be the source of the 5-hydroxytryptamine so released.

During experiments to be published elsewhere it was observed that the precursor of permeability-increasing globulins in plasma could be activated by incubation with isolated, washed mitochondria. It was therefore decided to test a similar system for the development of 5-hydroxytryptamine activity. Platelet-free exudate collected 24 hr. after intrapleural injection of turpentine is free of 5-hydroxytryptamine activity. 2 ml. of such resolving exudate was incubated for 30 min. at 37° with the washed mitochondria, isolated by differential centrifugation[4], from one pair of rat lungs.

As a result of this procedure the exudate acquired 5-hydroxytryptamine-like activity to the average extent of 1 μgm./ml. Saline similarly incubated with mitochondria failed to develop 5-hydroxytryptamine activity.

The 5-hydroxytryptamine-like activity in the incubated exudate was assayed on a piece of isolated guinea pig ileum suspended in oxygenated Tyrode solution. It was unaffected by the addition of mepyramine maleate (1 μgm./ml.) to the bath, and was abolished by the similar addition of 0·1 μgm. lysergic acid. The effect was also abolished by adding large amounts of 5-hydroxytryptamine to the bath prior to testing the exudate.

Resolving pleural exudate from rats contains an inhibitor of capillary permeability[1] similar to that described in guinea pig serum by Miles and Wilhelm[5]. This inhibitor suppresses the action of permeability-increasing globulins on blood vessels but is ineffective against peptides and histamine. However, it almost completely abolishes the action of 5-hydroxytryptamine on capillary permeability but fails to influence the effect of it on guinea pig ileum.

The action of low concentrations of 5-hydroxytryptamine on capillary permeability, its presence in adequate amounts in early inflammatory exudate, its liberation by interaction of plasma, platelets and cell constituents and its inhibition by a relatively specific depressant of capillary permeability in the blood all suggest that 5-hydroxytryptamine may help to mediate vascular changes in the earliest phases of inflammation. Its presence in exudates may also indicate that it is partly responsible for the pain of inflammation, as 5-hydroxytryptamine causes pain in low concentrations[6].

Finally, it is of some interest that a similar *in vitro* system, a rough approximation to the condition of tissue injury, should lead simultaneously to blood clotting, activation of a globulin system controlling capillary permeability and to release of 5-hydroxytryptamine.

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## Egg Yolk-Coagulating Enzyme in the Semen and Cowper's Gland of the Goat

Glycine egg yolk and egg yolk citrate, prepared by mixing equal volumes of 4 per cent glycine and egg yolk and 3·6 per cent sodium citrate and egg yolk, were used in an attempt to extend the volume of ejaculated goat semen and to preserve the motility and fertility of the spermatozoa. With semen diluted twenty times it was found that most of the initially motile spermatozoa remained so for three days in both the diluents at 3° C.; thereafter the number of live sperm and degree of motility declined precipitously. Extinction of spermatozoal life in glycine egg yolk was always preceded by coagulation of the diluent. The following