chromatography. The mechanism may be some form of adsorption chromatography. From considerations of the energies of surface adsorption of large molecules, and the fact that the spots do not tail, it seems that only very few groups are involved at any one time in the adsorption of one cell fragment. This may be due to the surface curvature of the cell fragments and the paper fibres.

This phenomenon should be useful for the simultaneous application of the techniques of chemical analysis and electron microscopy to obtain information about the chemical structure of the cell.

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A. T. Wilson

Institute of Nuclear Sciences,
Lower Hutt,
New Zealand.

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Some Pharmacological Effects of Staphylolysin on the Isolated Rat Uterus

The effect of staphylolysin on isolated organs has been hitherto studied mainly on isolated strips of rabbit or guinea pig gut[1–5]. The administration of the toxin causes a slow contraction, followed by unresponsiveness to the further application of toxins or drugs. It seemed to be of interest to perform experiments on the isolated uterus of the rat which does not respond to histamine.

Strips of the isolated rat uterus were set up in a 5-ml. bath of de Jalons fluid at 29°C. A batch of staphylolysin was obtained from the Institute for Sera and Vaccines in Prague. (We are very much indebted to Dr. Součková for the generous gift.)

The toxin was kept at about —15°C. in ampoules containing 0·5–1·0 ml. of the fluid toxin. Its toxicity was 6×10^{-4} ml. per 15–20 gm. of mouse. A repeated toxicity determination after two months revealed no changes.

The response of the isolated rat uterus differed according to the dose of toxin applied. When a concentration of 2×10^{-4} ml. per ml. was added to the bulk fluid, the spontaneous motility of the uterus strip increased but the tissue responded normally to acetylcholine and 5-hydroxytryptamine.

When the dose of toxin is increased to 10^{-3} ml. per ml. a tonic contraction usually appears together with the increase in spontaneous motility. When the dose is further increased, contracture developed slowly and even after washing the organ several times, the tissue remains unresponsive to acetylcholine or 5-hydroxytryptamine, whereas with the intermediate doses of toxin, repeated washing leads to reappearance of acetylcholine and 5-hydroxytryptamine sensitivity. The onset of the staphylolysin effect, whether increased spontaneous motility or slow contracture is characterized by a latent period, which is directly proportional to the dose administered (Fig. 1).

Washing of the organ during the latency period did not prevent the appearance of various effects according to the time when the washing is performed. The sooner the washing is carried out (within the first 2 min.), the easier it was to prevent the appearance of the staphylolysin reaction. When washing takes place 4 min. after the toxin administration (2×10^{-3} m./ml.) the usual contracture takes place.

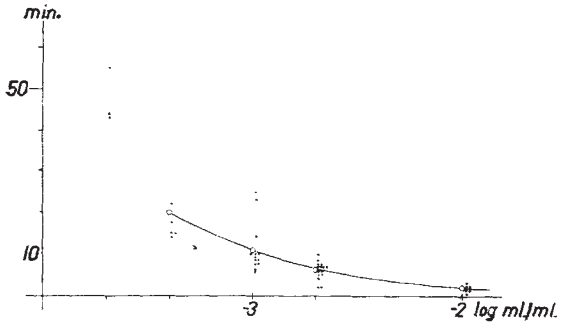

Fig. 1. Isolated rat uterus. Time/doses relation after administration of staphylolysin. Ordinate, latency period (min.); abscissa, doses in ml./ml. bath fluid

At present it is not clear what kind of reaction takes place, as the rat uterus does not respond to histamine. As the responses of the preparation to acetylcholine were unimpaired and as the toxin effects were not blocked by atropine (5×10^{-7} g./ml.), my results appear to afford some support to the view of Brown, Prichard and Quilliam[5] that the staphylococcal α-toxin can act by a direct muscle-stimulating effect.

It is of interest to note, however, that the 5-hydroxytyramine-antagonists, namely, lysergic acid diethylamine and 'Cepentyl' (a Spofa Prague product—*cyclo*acylamide of *d*-lysergic acid) in the dosage 2×10^{-6} gm./ml. or 10^{-5} gm./ml. of the usual toxin response or abolish it completely.

Further investigations are being undertaken in an endeavour to elucidate the mode of action of the toxin.

B. Wiegershausen

Pharmacological Laboratory,
Czechoslovak Academy of Science,
Praha.
Sept. 1.

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In vitro Cultivation of Blood Cells of *Drosophila melanogaster* in a Synthetic Medium

Although there have been a number of attempts to culture insect cells *in vitro*, with some successful results[1,2], these investigations have mainly been on organ growth, cell survival and parabiotic development. In recent years, Wyatt[3] and Grace[4,5] have attempted to culture insect tissues to study their multiplication and for the titration of insect virus, and to investigate the process of virus transmission by insects. Their techniques seem to be extremely useful for the solution of problems of insect genetics as biochemical, physiological, morphological, and pathological procedures.

Furthermore, the pronounced advances in the study of the genetics and biochemistry of microorganisms in recent years has stimulated the study of single somatic mammalian cells *in vitro*. The work of Puck[6] is an example of this type of study.

In the present work, a new culture medium for culturing the blood cells of larvæ of *Drosophila melanogaster* was devised in order to investigate the genetic and biochemical relations among various insect single cells.