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Use of Sulphonamides in the Treatment of Pleuro-pneumonia-like Organisms in Rats

IT is generally appreciated that a lung infection of adult rats is common to most laboratory rat colonies, and it is not unusual for up to 75 per cent of a colony to be infected. In recent years the disease has been given various names, but it is usually described now as a pleuro-pneumonia-like organism infection. This merely means that it is an infectious catarrh caused by these organisms. However, no specific organisms have been isolated which could be held responsible for the disease. Normally the infection only appears in the older rats, but the very young animals may also succumb to it, probably being infected by their mothers.

The disease first appears as a coryza, and the rat sneezes frequently with a mucus discharge from the nasal passages. This is followed by anorexia and gradual loss of weight. The hair becomes roughened and the rat takes on the typical appearance of a sick animal. In the very early stages there is little apparent change in the health of the animal; in fact, a perfectly healthy-looking animal may be found to have extensive lung damage. In the later stages of the disease, breathing becomes difficult and the nose is discoloured. The brownish crusting of the nose and the same discoloration of the inner fore-arms occur shortly before death. The brown discoloration is probably a stale mixture of blood and mucus from the nose. The rat at this stage of the disease is in an emaciated condition. The incidence of otitis media in our colony of August rats was very low, although it has been reported to be associated with a pleuro-pneumonia-like organism infection[1].

There seemed to be no method of controlling this disease, which periodically flared up in an otherwise healthy colony. Two practical measures were used: the isolation of infected animals, and, more usually, the immediate killing of all sick animals. These are drastic steps to have to take if long-term experiments are in progress.

A first attempt to combat the infection with crystalline penicillin (10,000 units/rat intra-peritoneally) was ineffective. We then tried sodium sulphadimidine ('Vesadin') also by intraperitoneal injection, each rat receiving 0·1 ml. per 100 gm. body-weight. This was followed by a course of triple sulphonamide ('Trinamide'), a mixture of equal parts of sulphamerazine, sulphadiazine and sulphapyridine. This was administered as an 0·2 per cent aqueous solution in the drinking water. This 'Trinamide' treatment was continued for a period of three weeks. There was a marked increase in the general well-being of the treated animals, and a gratifyingly large drop in the mortality-rate from about 60 to 2 per cent. The high mortality figure includes those rats which were killed when symptoms of the infection were first observed.

At the moment, a controlled experiment is being undertaken to test experimentally the effectiveness of these drugs as prophylactic agents in the control of pleuro-pneumonia-like organisms in a laboratory rat colony. The results so far have been very encouraging.

The Veterinary Department of Messrs. May and Baker, Ltd., very kindly supplied us with the 'Vesadin' and 'Trinamide' used in these experiments.

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Virus-like Bodies in a Transplantable Mouse Plasma Cell Tumour

THE plasma cell tumour designated *X*5563 originated in a 22½-month-old female *C3H/He* mouse in the Cancer Research Genetics Laboratory, Berkeley, California. It was successfully transplanted by Dr. H. I. Pilgrim, and mice bearing the second transplant generation were sent to the National Cancer Institute, Bethesda, Maryland, where it was routinely transplanted every 60 days in *C3H/He* mice for several transplant generations[1,2]. Mice inoculated with the tumour were sent to us by Dr. M. Potter, of the National Cancer Institute. The tumour is now in its third transplant generation in our hands.

The morphology of the tumour has been described by Dunn[1]. Microscopically the cells are described as closely resembling normal plasma cells, each having an eccentric nucleus and, in hæmatoxylin and eosin sections, a distinct central pale area.

We have examined sections of cells from the *X*5563 plasma cell tumour after fixation in osmium tetroxide and embedding in methacrylate, by phase contrast and electron microscopy. Under phase contrast, the tumour cells appear well differentiated and retain the characteristics of normal plasma cells. In a variable, but sometimes high, proportion of the tumour cells, however, a large, dense, osmiophilic inclusion can be seen occupying a central position within the cell, a position normally associated with the Golgi apparatus. On examination in the electron microscope the inclusions are seen to consist of large numbers of round membrane-bound bodies of uniform size having a diameter about 65 mμ (Fig. 1). Higher resolution micrographs show that the central portion of the body is of uniform but variable density and that the limiting membrane is double-layered. Individual particles are indistinguishable from the intracytoplasmic form of the virus-like bodies described by Bernhard *et al.*[3] in mammary tumours in mice. So far, however, no bodies corresponding to the extracellular form described by Bernhard *et al.* and by Dmochowski and Grey[4], and also observed by us in