recovery is possible is not known. One purpose of this investigation was to observe the alveolar cell population in these areas after anaphylaxis in the guinea-pig in terms of cytodynamics. The other purpose was to determine if cell turnover was influenced by either local mediators liberated in lung tissue or mediators produced by more generalized systemic shock. Because lung is the critical organ in guinea-pig but not in mouse, a comparison of alveolar cell populations was made between these two species.

TABLE 1. *Comparison of pulmonary alveolar cell turnover in guinea-pig and mouse after anaphylactic shock*

	Labelling index†			Mitotic index‡		
Guinea-pig	Mean	S.E.	*P*	Mean	S.E.	*P*
Control	342	23·8	—	283	27·0	—
Immediate post-shock	303	21·3	<0·30	281	20·3	<0·6
4 hours post-shock	180	16·3	<0·001	196	15·0	<0·01
36 hours post-shock	308	22·8	<0·30	215	18·8	<0·05
Mouse						
Control	484	34·3	—	400	32·3	—
Immediate post-shock	436	30·3	0·6	387	26·3	0·975
4 hours post-shock	248	22·3	<0·001	235	20·8	<0·001
36 hours post-shock	385	27·5	<0·025	280	23·5	0·005

No. of animals per group = 4; no. of sections examined per animal = 4; therefore $N = 16$

†Labelling index = No. of labelled nuclei per 10^5 cells counted in 5 μm section 1 hr after tritiated thymidine.

‡Mitotic index = No. of arrested metaphases per 10^5 nuclei counted in 5 μm section 4 hr after colchicine.

Female guinea-pigs and female mice of the same strains and age were sensitized by the intraperitoneal injection of egg albumin. Guinea-pigs were shocked by an aerosol challenge (Herxheimer, 1951). Mice were shocked by intraperitoneal injections of egg albumin. The labelling index, an index of DNA synthesis and the mitotic index were measured using the autoradiographic and colchicine techniques described by Simnett & Heppleston (1966).

In both species, alveolar cell turnover was depressed in the immediate post-shock period. Maximum depression occurred at 4 hr, with a recovery towards the pre-shock state after 36 hr (Table 1).

REFERENCES

BROCKLEHURST, W. E. (1953). Occurrence of an unidentified substance during anaphylactic shock in cavy lung. *J. Physiol., Lond.*, **120**, 16*P*.

BROCKLEHURST, W. E. (1955). Response of cavy ileum to SRS-A from lung of man and of cavy. *J. Physiol., Lond.*, **128**, 1*P*.

BROCKLEHURST, W. E. (1960). The release of histamine and formation of a slow reacting substance (SRS-A) during anaphylactic shock. *J. Physiol., Lond.*, **151**, 416–435.

HERXHEIMER, H. (1951). Repeatable microshocks of constant strength in guinea-pig anaphylaxis. *J. Physiol., Lond.*, **117**, 251–255.

SANYAL, R. K. & WEST, G. B. (1958). The relationship of histamine and 5-hydroxytryptamine to anaphylactic shock in different species. *J. Physiol., Lond.*, **144**, 525–531.

SIMNETT, J. D. & HEPPLESTON, A. G. (1966). Cell renewal in the mouse lung. *Lab. Invest.*, **15**, 1793–1801.

The effect of drugs on bovine tracheobronchial and pulmonary vascular tissue.

MAUREEN M. AITKEN* and J. SANFORD, *Department of Veterinary Pharmacology, University of Glasgow.*

Strips of trachealis muscle, segments of bronchiole and spiral strips of pulmonary artery were taken from bovine lungs within 15 min of slaughter and were suspended in

Krebs-Henseleit solution at 37°C in an isolated organ bath. The preparations were gassed with a mixture of 95% oxygen and 5% carbon dioxide and contractions were recorded isotonically using a linear motion transducer and pen recorder. Drugs remained in contact with preparations of trachealis and pulmonary artery for 5–10 min with a rest period of 15–20 min between each dose. Bronchiolar preparations responded more slowly and drugs were allowed to remain in contact for 15 min with a 20 min rest period.

Tracheal muscle contracted in response to acetylcholine (0·002–1·0 μg/ml), 5-hydroxytryptamine (0·01–2·0 μg/ml), bradykinin (0·01–0·1 μg/ml) and histamine (0·05–5·0 μg/ml). Contractions in response to acetylcholine, 5-hydroxytryptamine and bradykinin were antagonized by atropine, methysergide and sodium meclofenamate respectively. Antagonism between 5-hydroxytryptamine and methysergide was seen in every preparation in which this was tested (seven) but atropine was only effective as an antagonist to 5-hydroxytryptamine in concentrations one hundred times those which antagonized an equi-effective dose of acetylcholine. These findings do not support the suggestion of Offermeier & Ariëns (1966) that 5-hydroxytryptamine might act in this tissue by releasing acetylcholine.

Bronchiolar muscle also contracted in reponse to acetylcholine, 5-hydroxytryptamine and histamine but this tissue was less sensitive than tracheal muscle, requiring 10–100 times greater concentrations to produce a response. Pulmonary artery contracted in response to 5-hydroxytryptamine (0·005–0·2 μg/ml), histamine (0·02–2·0 μg/ml), bradykinin (0·1–20 μg/ml) and adrenaline (0·005–1·0 μg/ml).

The lung has been found to be the organ principally involved in acute systemic anaphylaxis in cattle (Aitken & Sanford, 1969a), but the mediators involved have not yet been identified. *In vivo* protection against anaphylaxis in cattle has been achieved by administration of sodium meclofenamate (Aitken & Sanford, 1969b) as in the guinea-pig (Collier & James, 1967).

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REFERENCES

AITKEN, M. M. & SANFORD, J. (1969a). Experimentally induced anaphylaxis in cattle. *J. comp. Path.*, **79**, 131–139.

AITKEN, M. M. & SANFORD, J. (1969b). The protection of cattle against experimentally induced anaphylaxis. *Nature, Lond.*, **223**, 314–316.

COLLIER, H. O. J. & JAMES, G. W. L. (1967). Humoral factors affecting pulmonary inflation during acute anaphylaxis in the guinea-pig *in vivo*. *Br. J. Pharmac. Chemother.*, **30**, 283–301.

OFFERMEIER, J. & ARIËNS, E. J. (1966). Serotonin I. Receptors involved in its action. *Archs int. Pharmacodyn. Thér.*, **164**, 192–213.

A sensitive method for the assay of oxytocin in blood.

J. R. VANE and K. I. WILLIAMS*, *Department of Pharmacology, Institute of Basic Medical Sciences, Royal College of Surgeons of England, London, W.C.2.*

A search has been made for an assay tissue selectively sensitive to oxytocin and suitable for use as a blood-bathed organ (Vane, 1964). Intestinal smooth muscle preparations from chicks, rats, desert rats, cats, dogs, rabbits all proved too insensitive or too unspecific. Only the uterus of the desert rat responded to oxytocin at concentrations less than 1 m-u./ml, but this often exhibited spontaneous contractions and was too unspecific.