levels produced during adjuvant arthritis. However, gold salts are capable of inhibiting these enzymes *in vitro* although each salt displayed a different profile of enzyme inhibition.

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Mediation by adrenaline of lung surfactant secretion induced by oxotremorine in neonatal rabbits

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Thirty min after oxotremorine (0.2 mg/kg i.p.) the total content of phosphatidylcholines (PC) of 6 lung washes obtained from neonatal rabbits via the trachea was double that of saline controls (Abdellatif & Hollingsworth, 1977). However, oxotremorine infused via the pulmonary artery into isolated, perfused and ventilated lungs of neonatal rabbits failed to alter the PC content of lung washes. We have now further examined this action of oxotremorine and suggest that an indirect mechanism is involved.

Atropine or (±)-propranolol were given at 40 min and oxotremorine at 30 min before killing. The antagonists had no effect themselves on the lung wash PC content but abolished the rise induced by oxotremorine. Adrenaline given 30 min before killing significantly raised the PC content of lung washes and this was antagonized by (±)-propranolol. The PC content of washes was not altered 45 min after bilateral adrenalectomy but the action of oxotremorine was abolished. The PC contents of the residual lung tissues were similar in all groups.

The surfactant activity in lung washes from further groups of rabbits was measured using a Wilhelmy surface tension balance against a standard curve with dipalmitoylphosphatidylcholine. Oxotremorine and adrenaline significantly ($2P<0.05$; analysis of variance) increased the surfactant in washes to 73.8 and

Table 1 Total mean phosphatidylcholine (PC) content of lung washes from neonatal rabbits.

Drug or treatment and dose	*PC content (mg/g dry wt)*	*n*
Saline	25.7[a, b]	5
Oxotremorine (0.2 mg/kg)	50.5[a, c, d, f]	7
Atropine (2 mg/kg)	20.8	5
Oxotremorine (0.2 mg/kg) + Atropine (2 mg/kg)	21.5[c]	5
(±)-Propranolol (1 mg/kg)	32.9	5
(±)-Propranolol (1 mg/kg) + Oxotremorine (0.2 mg/kg)	20.4[d]	5
Adrenaline (50 μg/kg)	78.0[b, e]	5
Adrenaline (50 μg/kg) + (±)-Propranolol (1 mg/kg)	20.4[e]	5
Adrenalectomized	29.5	4
Adrenalectomized + Oxotremorine (0.2 mg/kg)	26.9[f]	4

Values with same superscripts were compared and are significantly different (Analysis of variance; a, $2P<0.01$; b–f, $2P<0.001$).

72.2 mg/g dry weight respectively compared with saline controls (42.8 mg/g) (n=5).

Infusion of oxotremorine (0.34 μg/ml) into the isolated lung for 10 min between the 5th and 6th washes failed to alter the PC content. This was significantly ($2P<0.05$; Mann Whitney U-test) raised from 3.66 (±0.6) to 4.80 (±0.8) mg/g (n=6) by a 10 min infusion of adrenaline (3.4 μg/ml).

The present results suggest that oxotremorine causes secretion of stored lung surfactant by an indirect mechanism involving adrenaline release from the adrenal medulla and subsequent activation of lung β-adrenoceptors.

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Effects of diazoxide on total lung resistance

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We have shown previously that diazoxide is an effective bronchodilator in guinea pigs (Biggs, Demajo & Peterson, 1977). However, during the course of these experiments we observed an initial dose-related increase in total lung resistance (R_{TL}) in animals given diazoxide. In this paper we report the results of investigations of the initial effects of diazoxide on dynamic lung compliance (C_L) and pulmonary flow resistance (R_L) in anaesthetized guinea pigs, using a method similar to that described by Mead & Whittenberger (1953). In order to eliminate interference from the respiratory muscles, we administered pancuronium bromide (0.1 mg/kg). This drug had no observable effects on C_L or R_L and all of the following experiments were performed in the presence of this drug.

Diazoxide (40 mg/kg), given intravenously, caused a small decrease in C_L and a much more marked increase in R_L. Both parameters usually returned to normal within a period of 4 to 5 min. Bilateral vagotomy or pretreatment of the animals with atropine (0.5 mg/kg) intravenously was without effect on the decrease in C_L and the increase in R_L produced by diazoxide, suggesting that neither vagal reflexes nor a muscarinic action of acetylcholine is involved in the changes induced by diazoxide. In animals pretreated with mepyramine (0.1 mg/kg), intravenously, the increase in R_L produced by diazoxide was abolished but the decrease in C_L was unchanged. In animals pretreated with indomethacin (0.1 mg/kg) or aspirin (1 mg/kg), intravenously, the decrease in C_L was abolished but the increase in R_L was unchanged.

If it is assumed that changes in R_L result mainly from actions on the trachea and large bronchi, whereas C_L is influenced mainly by actions at the level of the respiratory bronchioles and alveoli (Nadel, 1965), then it can be inferred that diazoxide initially increases R_{TL} by two separate mechanisms. Thus the results suggest that diazoxide causes an initial increase in R_L by a direct or indirect histamine-like action on the large airways, an effect that can be blocked by mepyramine. In contrast, the initial decrease in C_L appears to involve the release of prostaglandins or prostaglandin-like substances from the small airways, an action that can be blocked by indomethacin or aspirin.

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A pharmacological study of the mediators released following anaphylaxis of the sensitised hind quarters of the guinea-pig

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Sensitized hind quarters of guinea-pigs were perfused as described for rats and guinea-pigs by Feldberg & Mongar (1954) through the abdominal aorta and the effluent was collected from the vena cava. The effluent from the hind quarters was superfused over the following three bioassay tissues; rat stomach strip (RSS), rat colon (RC) and the longitudinal muscle strip of the