

DEMONSTRATIONS

A method for the investigation of changes in the lung lining layer of the guinea-pig

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Phospholipid is lost from guinea-pig lung following anaphylaxis (Goadby & Smith, 1966). A possible site of loss is the alveolar lining layer (Pattle, 1965).

The lung lining layer was obtained by washing the alveolar surface via the airways with 40 ml/kg

weights on the supporting bar whilst the ring was immersed in the solution.

As the ring was raised through the surface of saline, the force upon it rose to a maximum and then declined before the ring became detached from the surface (Figure 1a). When an extract of guinea-pig lung was introduced to the surface, a maximum force of 49.3 ± 2.2 dynes/cm was recorded at 100 cm^2 decreasing to 18.6 ± 2.1 dynes/cm at 10 cm^2 (Figure 1b). Tension-area hysteresis was exhibited by all samples.

This simple method allows determination of the surface activity of lung extracts of small animals and the results are comparable to those obtained using other methods (Fujiwara, Adams & Seto, 1964).

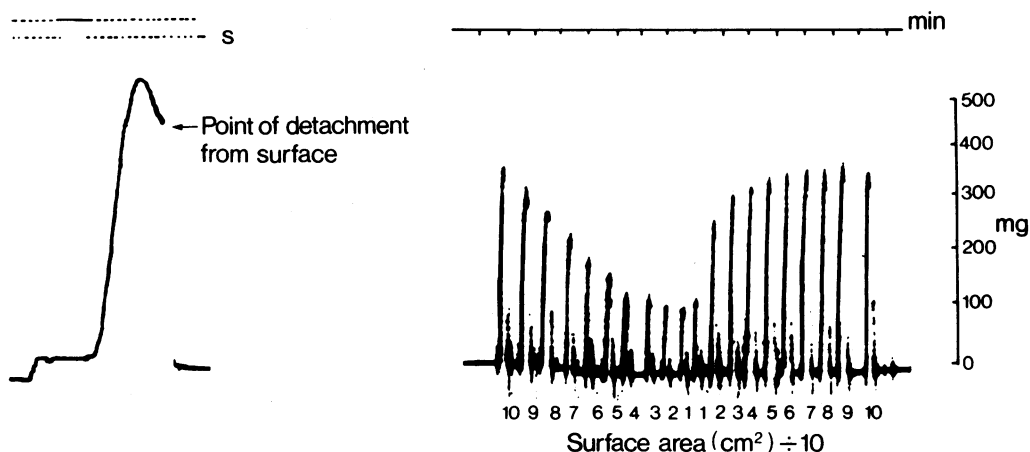


Fig. 1 Surface tension measured by a modified du Noüy (1919) method. (a) Ring passed upward through the surface of 0.9% (w/v) saline on fast recorder write-out. (b) Effect of guinea-pig alveolar wash upon surface tension with reduction and expansion of surface area. Recording and time trace stopped when ring detached from surface.

body weight of 0.9% (w/v) saline as described by King (1968).

Determinations of the surface tension were made by a method derived from that of du Noüy (1919). A platinum ring (mean radius 0.65 cm) was passed upwards through the surface of the liquid which was contained in a Perspex[®] trough (4 x 30 x 1 cm) coated with purified paraffin wax (Stanwax). The force on the ring was detected by a force-displacement transducer (Devices 2STO2) which was held in a device which allowed the raising and lowering of the ring. The output of the transducer was displayed on a Devices M2 recorder. Calibration was effected by placing

References

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