

Table 2

| Substance | Concentration range | No. of observations | Regression (b) | σ_b | Log K (y when log x = 0) | $\sigma_{\log K}$ |
|------------|--------------------------|---------------------|----------------|-------------|-----------------------------|-------------------|
| Dextran B | 0.170-0.565 gm. per cent | 32 | 2.147 | ± 0.072 | 2.61 | ± 0.038 |
| Fibrinogen | 0.158-0.752 gm. per cent | 10 | 2.197 | ± 0.113 | 2.29 | ± 0.073 |
| Dextran C | 0.170-0.700 gm. per cent | 8 | 2.046 | ± 0.156 | 2.19 | ± 0.170 |
| Dextran D | 0.382-1.360 gm. per cent | 8 | 2.406 | ± 0.190 | 1.63 | ± 0.037 |

molecules in patients' sera^{8,9}. The quantitative evaluation of these different factors will be the subject of a full communication.

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J. HARDWICKE
C. R. RICKETTS
J. R. SQUIRE

Department of Pathological Studies,
University of Birmingham,
and

Medical Research Council Industrial
Medicine and Burns Research Units,
Birmingham Accident Hospital.
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Effect of Aureomycin on *Trichomonas intestinalis hominis*

DURING studies of aureomycin in human amoebiasis, we observed a remarkable side-effect in those patients who simultaneously harboured *Trichomonas intestinalis*. Before treatment, these flagellates were present in small numbers only; but they increased considerably after the administration of 3-4 gm. of aureomycin. This increase continued during treatment lasting seven to ten days and was not dependent on the consistency of the stools before or during treatment. In three out of the eight cases observed the increase was enormous; examination of these stools gave the impression of a pure culture of *Trichomonas*. Though it is known that *Trichomonas intestinalis* may appear in large numbers in the convalescent stage of bacillary dysentery (Manson-Bahr), it is less frequently observed in amoebic dysentery. We consider the regularity of the increase in eight cases and the enormous numbers occurring in three cases as particularly noteworthy.

Two possible explanations are suggested for this increase: (1) aureomycin may have caused a change in the bacterial flora of the intestine, making this milieu more congenial for the propagation of *Trichomonas*; (2) aureomycin may have exerted a specific growth stimulation on the flagellates. Such an effect was not observed on *Chilomastix* or *Lambliia*, which remained uninfluenced by this drug.

Studies on the effect of aureomycin on the intestinal flora will be reported shortly, and we are continuing

to study the influence of this drug *in vitro* on *Trichomonas intestinalis*.

F. KLEEBOERG
D. BIRNBAUM

Medical Department A,
Rothschild Hadassah University Hospital,
Jerusalem.
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Effect of 2,4-Dinitrophenol on Osmoregulation in Isolated Kidney Slices

Stern, Eggleston, Hems and Krebs¹ reported that slices of a number of guinea pig tissues swelled in isotonic solutions under anaerobic conditions. They suggested that the fluid balance of living tissues is not determined merely by physical forces, but by a mechanism dependent upon the supply of energy. Robinson² found that rat kidney slices swelled to a similar extent, mainly on account of an increase in the volume of intracellular water, when respiration was inhibited by small concentrations of cyanide. This swelling was reversed when the oxygen uptake recovered, as hydrogen cyanide distilled out of the medium. The water content of the slices varied inversely with their oxygen consumption over the whole range from normal respiration to complete inhibition. The amount of osmotic work required to maintain the water content of the slices as a steady state was calculated, and found to be proportional to their oxygen uptake. It was therefore suggested that the intracellular fluid was hypertonic, and that the normal volume and internal hypertonicity of the cells were maintained by active transport of water outwards across the cell membranes at the expense of energy directly derived from oxidation.

| | No. of expts. | Respiration | | Total tissue water | |
|-----------------------------------|---------------|----------------------|------------|--------------------|------------|
| | | (μ l./mgm./hr.) | \pm S.D. | % | \pm S.D. |
| Normal medium | 44 | 4.2 | 0.4 | 77.5 | 0.8 |
| " + M/200 cyanide | 8 | 0.4 | 0.15 | 84.2 | 0.9 |
| " + 10^{-4} M 2,4-dinitrophenol | 13 | 4.6 | 0.5 | 82.6 | 1.0 |

In recent experiments, 10^{-4} M 2,4-dinitrophenol was added to the isotonic medium in which adult rat kidney slices were respiring in Barcroft manometers at 38.5° C. In this solution the slices swelled almost as much as they did when their respiration was inhibited by cyanide, though their oxygen uptake, if anything, was slightly increased. The total water content of the slices, which serves as a measure of swelling, is shown in the accompanying table. Respiratory rates are expressed in μ l. of oxygen per hr. per mgm. initial moist weight of tissue. The smallness of the effect of 2,4-dinitrophenol upon the oxygen uptake may be explained by the observation of Dodds and Greville³ that 2,4-dinitro-*o*-cresol did not increase the oxygen uptake of rat kidney slices