Technical method

estimate of the numbers of micro-organisms present in the original sample. Pathogenic organisms isolated from patients producing mucopurulent sputa were frequently present in virtually pure culture along the 10^7 per ml dilution streak (fig 3). However, 'coliforms' cultured from sputa produced in patients who were already receiving broad-spectrum antimicrobial therapy were sometimes isolated at 10^8 per ml. Examination of the Gram film and clinical assessment of the patient were necessary before deciding upon their significance. One case of *Escherichia coli* pneumonia was seen in this series, and the colony count in both dilution and loop streak methods was greater than 10^9 per ml.

We acknowledge the technical assistance of Mr. A. Porter and Miss E. M. Jones from this laboratory, and Mr. S. P. Willmott at the Public Health Laboratory, Epsom, Surrey.

References


Letters to the Editor

Isolation of Vibrio cholerae

I would like to add two suggestions to the lucid instructions by Furniss and Donovan (*J. clin. Path.,* 1974, 27, 764-766) for the isolation and identification of the cholera vibrio.

One is that if the thiosulphate-citrate-bile-salt-agar (TCBS) medium is preferred to Monsur’s, one should also use a non-inhibitory medium, because we find that the dehydrated TCBS from one British supplier is fairly inhibitory even to fresh isolates and becomes almost completely inhibitory about two weeks after the container has been opened. Storage may be better in a cooler climate, but this needs to be defined. A simple non-selective medium can be made from peptone agar or nutrient agar with 0-5% bile salt or 0-1% Teepol adjusted to pH 8-0-8-5.

The second point is the importance of colony morphology. There are very few faecal bacteria having the flat, almost transparent, bluish colonies of the cholera vibrio. This is of course better seen on a transparent medium than on TCBS. A rare strain may have a wrinkled centre on overnight incubation: a rugose variant. However, the rest of the colony will give a clue. With a positive oxidase reaction and the usually strongly positive agglutination in a slide test, there is seldom any difficulty in identifying the vibrio within one day with reasonable confidence.

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SI units, pH and cH+

We were disappointed in the UK-SI Committee’s reply (Baron et al, 1975) to the comments by Bold and his colleagues (1975) regretting the lack of guidance as to whether an SI unit should be used to report H⁺ concentration. It is precisely because it is an area of scientific controversy that expert guidance would have been appreciated. This particular topic has after all been controversial ever since Sørensen (1909a,b) defined pH formally as—

$$pH = \frac{1}{\log [H^+]}$$

whereas in actual practice

$$\text{pH} = \text{pH}_4 + \frac{(E - E_a)}{2.3026 R T}$$

The debate as to whether the special symbol pH should be used to denote H⁺ activity as opposed to H⁺ concentration continued until Peters and van Slyke (1931), in their classic work, pronounced in favour of the commonplace use of pH to cover both situations.

Our own preference for reporting H⁺ in acid-base work in nanomole/litre has been expressed elsewhere (Howorth, 1974), but a further reason for resolving the arguments about activity/concentration of ions is the increasing use of electrodes other than the H⁺-glass electrode in chemical pathology. For example, we expect to have in routine use within a few months a non-colorimetric serum electrolyte analyser based entirely on specific ion electrodes:

- Na⁺ electrode: for Na⁺
- K⁺: for K⁺
- H⁺: for total CO₂
- NH₃: for urea
- O₂: for glucose

Many other specific ion electrodes, for example, for calcium and halides, are routinely used elsewhere, as well as CO₂ and O₂ electrodes in acid-base work.

If the assumptions about activity coefficients implicit in converting electromotive activity to concentration units are unacceptable to the UK-SI Committee and others, we would all have to consider reporting Na⁺ results as pNa, K⁺ as pK, and so on (Svendsen, 1966). We ask, is it really a useful concept to report urea as

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