Letter to the Editor

A CAUSE OF ERROR IN THE DETERMINATION OF THE HAEMATOCRIT USING THE SMA -4

Sir,

One of the advances in automation of haematology has been the introduction of the AutoAnalyzer SMA-4. From a single sample of blood this instrument determines four parameters, *viz.*, the haematocrit, the haemoglobin, the red cell and the white cell counts. In conjunction with a data logger, the MCH, MCHC, and MCV may be calculated. In our experience the results of the haematocrit determinations have not always been reliable.

In the SMA-4 the electrical conductivity of a sample is taken as an index of its haematocrit The conductivity is a function of the concentration of ions present. Therefore, an excess of ions supplied by the anticoagulant EDTA (dipotassium salt) could cause inaccuracy. While comparing the results of packed cell volumes done on the SMA-4 and by centrifugation in the microhaematocrit method, some discrepancies were apparent. These occurred when the anticoagulated bottles were not properly filled.

It has already been demonstrated by Pennock and Jones[1] that excess concentration of EDTA reduces the packed cell volumes when determined by the microhaematocrit method. In order to investigate the effect of excess EDTA on the conductivity method for packed cell volumes, a series of experiments was set up. Blood from several normal individuals was added to eight anticoagulated tubes to give a final concentration ranging from 2 mg to 9 mg of EDTA per millilitre of blood. The results are set out in the table below:

Concentration of EDTA (mg/ml blood)	2	3	4	5	6	7	8	9
Mean % error of SMA-4 method	0	1	4	8	11	13	18	21
Mean % error of microhaematocrit method	0	0	0	1	1	1	2	2

In the microhaematocrit method the concentration of EDTA in this range does not alter the haematocrit reading significantly. This finding is in accordance with that of Pennock and Jones[1]. When samples of blood with high concentration of EDTA are used, the haematocrit determination, carried out by a conductance method, is significantly altered.

To produce a final concentration of 2 mg/ml of blood as recommended by Dacie and Lewis[2], we add 10 mg of EDTA to each of our haematology sample bottles.

If less than 4 ml of blood is added to the sample bottle the resultant concentration of anticoagulant is such as to produce a significant error in the haematocrit reading. Therefore, if the SMA-4 is to be used for haematocrit determinations, it is important that the blood should be mixed with the anticoagulant in the correct proportions.

In the determination of the other parameters on the instrument, the concentration of anticoagulant is less important.

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REFERENCES

[1]Pennock and Jones, *J. clin. Path.*, 1966, **19**.
[2]Dacie, J. V., and Lewis, S. M. (1963). *Practical Haematology*, 3rd ed. p.4. Churchill, London.

A simple device for microdialysis—concluded

facilitates the decision as to which of possibly a large number of fractions are worth pooling and concentrating in bulk. The method has been found to be useful in the analysis of column-separated fractions of antibodies and antigens, as well as eluates from red cells, which had previously adsorbed a variety of immunologically active proteins. Additionally, the device is suitable for dialysing small volumes of protein solution to change ionic condition, or to remove low molecular weight substances such as 2-mercaptoethanol from sera treated with this agent.

CORRECTION

We print below the corrected Table III of the paper by J. McGeachie and W. McCormick 'Importance of potency in typing by colicine production' (*J. clin. Path.*, **20**, 887-891).

TABLE III

PATTERN OF COLICINES AT THE RANGES OF TITRES NORMALLY PRODUCED

Colicine	*Reciprocal of Titre*	*Indicators*															
		2	*56*	*17*	*2M*	*38*	$\frac{56}{56}$	$\frac{56}{98}$	*R1*	*R6*	*M19*	$\frac{2}{7}$	$\frac{2}{64}$	$\frac{2}{15}$	*R5*	*Row*	*Phi*
A	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+
	256	+	+	–[1]	–	–	+	+	+	+	–	+	+[2]	+	–	+	+
B	16	+	+[2]	+	–	+	+	+	+	+[2]	–	+	+	+	+	+	+
	128	+	+	+	–	+	+	+	+	+	–	+	+	+	+	+	+
D	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
	256	+	+	+	–	+	+	+	+	+	–	+	+	+	+	+	+
K	1,000	+	–	+	–	+	–	–	+	–	–	–[1]	+	+	+	+	+
	8,000	+	–	+	–	+	–	–	+	–	–	–[1]	+	+	+	+	+
S4	Neat	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
	256	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+
V	2	–	+	+	–	–	–	–	–	+	–	–[1]	–[1]	–[1]	–	+	+
	1,024	+	+	+	+	+	–	–	+	+	–	–[1]	+	+	+	+	+

\+ = inhibition of indicator
– = no inhibition of indicator

[1]inhibition at this level with Colindale subculture
[2]no inhibition at this level with Colindale subculture