Cyanmethaemoglobinometry on the AutoAnalyzer

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In this department, haemoglobinometry has been routinely carried out for more than six years on an AutoAnalyzer. The original oxyhaemoglobin method was described in this journal (Nelson and Lamont, 1961). The possibility of adapting this analytical technique to the estimation of haemoglobin by the more stable cyanmethaemoglobin method was tested by us and reported to be satisfactory at the Symposium on AutoAnalyzer Techniques which was held in London in 1962.

The recent article on cyanmethaemoglobinometry on the AutoAnalyzer by Kemp (1966) has prompted us to put on record the modifications which we introduced to convert our original system to the determination of haemoglobin by the cyanmethaemoglobin method.

These changes have consisted of (1) the replacement of the ammonia water diluent by a Drabkin ferricyanide-cyanide reagent; (2) the introduction of a wash between the individual blood specimens, using the Pecker automatic sampler and wash attachment designed in our own biochemical laboratories for use with the AutoAnalyzer sampler; (3) the introduction of a six-minute delay coil in order to allow complete conversion of haemoglobin to cyanmethaemoglobin; (4) the replacement of the haemolysed whole blood standards by whole blood suspensions.

From the flow diagram in Fig. 1, it can be seen that the flow lines are as in the original method. After mixing and conversion to cyanmethaemoglobin, the colour intensity is measured in a 3 mm. flow cell at 538 mμ, using a filter with a band width of 10μ and 42% transmission at peak wavelength.

Four secondary standards are prepared from whole blood and suspended in citrate/plasma to cover a range from 4 to 16 g./100 ml. of haemoglobin. These are pre-calibrated on a spectrophotometer by the cyanmethaemoglobin method against standard cyanmethaemoglobin solution. A curve is constructed from the results of the auto-analytical assay of these four standards which is subsequently used to determine the concentration of the unknowns. In order to eliminate errors in reading the peaks, each run is divided into blocks of 10 samples by a water blank which acts as a marker.

The automated analysis of large test batches makes the provision of an adequate control procedure essential. Traditionally this is done by incorporating in each batch samples of accurately determined haemoglobin concentration and ensuring that the results obtained for these control samples always fall within carefully defined limits. It is considered essential that this control should

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Letters to the Editor

RENAL MASTOCYTOSIS IN A CASE OF CONN’S SYNDROME

Sir,

Evidence has accumulated to suggest a role for heparin in the regulation of aldosterone secretion (Vallent, Fachet, Palkovits, and Dévényi, 1964; Abbot, Gornall, Sutherland, Steifel, and Laidlaw, 1966; Conn, Rovner, Cohen, and Anderson, 1966) and, therefore, we think it is worthwhile to make known an observation on renal mastocytosis in a case of Conn’s syndrome.

The mast-cell count was estimated according to Mills, Strickland, and Paterson (1958). The results were expressed as the average number of mast cells per square centimetre of tissue.

In practice such a control procedure is sometimes insensitive in detecting small aberrations. We have, therefore, introduced the cumulative delta sum technique which is applicable to large batches. Theoretically the daily average should be constant. Deviations from the norm are rapidly detected when the average result each day is subtracted from a standard reference figure and these differences cumulatively added. The acquisition of the necessary information for the Q-sum is simplified by the recent introduction into the laboratory of a punch card data processing system.

This cyanmethaemoglobin method of haemoglobin analysis on the AutoAnalyzer has been in routine use for two years and has proved itself to be entirely satisfactory.

REFERENCES

EFFECT OF DILUENTS ON BLOOD CLOT LYsis

Sir,

I was interested to read Mr. M. J. Gallimore’s paper ‘Effect of diluents on blood clot lysis’ (May, 1967). For the record, in 1958 Dr. Ferguson and I, in experiments very similar to those of Mr. Gallimore, showed that sodium chloride is inhibitory to fibrinolysis compared with phosphate buffer, and we concluded: ‘normal saline is found to be inhibitory to fibrinolysis, which in part explains the very different degrees of fibrinolytic activity found in normal blood by various workers.’

G. R. FEARNLEY

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REFERENCE

Cyanmethaemoglybinometry on the auto analyzer.

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