presumably because they have a short life span and disintegrate before the sediment is examined.

The test-strip screen definitely saves time in the detection of short-lived pathological urinary constituents. For more effective urinalysis, I suggest using the following modified test-strip screening procedure:

A. Selection of pathological samples by means of test strips.
B. Microscopic analysis in the following order:
   1. Samples with a positive leukocyte and (or) nitrite test
   2. Samples with a positive blood test
   3. Samples with a positive protein test
   4. All remaining pathological samples

I promptly investigated all samples giving a positive leukocyte and (or) nitrite test (Combur-S-Test-U) by microscopy, before all other pathological specimens. The results I obtained were remarkable:

Total no. of samples: 719 (100%)
No. of samples selected for microscopy: 204 (28.4%)
No. of casts detected:
- hyaline: 8
- granular: 4
- coarse granular: 2
- waxy: -
- leukocyte: 24
- erythrocyte: 3
- Hb-myoglobin: -
- epithelial: 9
- epithelial conglomerates: 3
- tubular epithelia: 39

As far as I know, no other results obtained on an unselected patient-sample population show such a large proportion of cell casts—in particular leukocyte casts. The increased efficiency of this procedure becomes all the more apparent when we bear in mind that this large number of pathological constituents were found in just 28.4% of all the samples examined. The detection of granular casts via the cardinal symptom, proteinuria, is not yet included. My subsequent investigations have confirmed this increased diagnostic efficiency.

References:

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Methyl p-Hydroxybenzoate as Preservative in Phosphate-Buffered Salt Solution for Electronic Cell Counters

To the Editor:

Use of sodium azide as a preservative in diluents for electronic cell counters is not entirely satisfactory: it is toxic (1), probably carcinogenic (2), and it can cause explosion hazards in metal plumbing (3). The preservatives used in several commercially available and relatively expensive diluents is not specified.

In our laboratory we are now routinely using an iso-osmotic phosphate-buffered salt solution, preserved with methyl p-hydroxybenzoate (methylparaben, HB) as a diluent in the S-plus and S-5 electronic blood-cell counters manufactured by Coulter Counter Electronics Ltd., England. "Lyse S" (Coulter) is the lysing and hemoglobin reagent (4); the instruments are flushed with "Isoterge" (Coulter) at the end of each day. The composition of and specification for the diluent in deionized water are as follows:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Conc., g/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl</td>
<td>9.50</td>
</tr>
<tr>
<td>Na2HPO4 × 2H2O</td>
<td>1.26</td>
</tr>
<tr>
<td>KH2PO4</td>
<td>0.230</td>
</tr>
<tr>
<td>KCI</td>
<td>0.460</td>
</tr>
<tr>
<td>HB</td>
<td>0.170</td>
</tr>
</tbody>
</table>

Control variable | Specification |
- pH              | 7.3 ± 0.1    |
- conductivity (22 °C) | 16.5 ± 0.5 mM/cm² |
- osmolarity       | 330 ± 5 mosm/L|

A 350-L batch suffices for 10 days of use in our hematology department. Batches of 20 L are successively filtered through cellulose nitrate filters of 0.8-µm and 0.2-µm nominal pore size. Acidity, conductivity, osmolarity, and blank counts must meet the specifications indicated above.

We measured the usual hematological variables for 74 blood samples, first with a randomly chosen batch of the HB-preserved diluent, then with use of a commercial product, with no change in Counter S-plus settings. The results correlate well (Table 1).

The daily mean (n = 50) and SD for these hematological variables during four months when the HB-preserved diluent was used were not significantly different from results obtained with use of an azide-preserved diluent (Student's t-test, p > 0.05).

On using HB-preserved diluent for one year, we found no differences in contamination of the flow system in either cell counter than when we used azide-preserved or commercial diluents. Maintenance schedules, done in accordance with the manufacturer's recommendations, were unchanged.

HB is a good bacteriostatic agent, and we observed no significant changes in osmolarity, conductivity, and blank counts in a solution stored for one year in a tightly capped container. The pH decreased by 0.5 unit, a well-known phenomenon for phosphate buffers.

We conclude that the described solution is a valid and inexpensive alternative to commercial products. Its stability is good and its preparation relatively easy. Batch-to-batch variations are minor; as a rule, calibration settings need not be changed between batches. Moreover, we now know the composition, manufacturing, and quality control of these solutions.

References:

C.A. Arts
G.P. Op de Weegh

Tables

Table 1: Statistical Summary of Results Obtained with HB-Preserved Diluent (y) vs Commercial Diluent (x) (n = 74)

<table>
<thead>
<tr>
<th>Slope</th>
<th>y-intercept</th>
<th>r</th>
<th>y</th>
<th>x</th>
<th>S_p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukocytes, 10^9/L</td>
<td>1.00</td>
<td>.05</td>
<td>.998</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Erythrocytes, 10^12/L</td>
<td>1.00</td>
<td>.03</td>
<td>.997</td>
<td>4.48</td>
<td>4.43</td>
</tr>
<tr>
<td>Hemoglobin, mmol/L</td>
<td>1.01</td>
<td>.08</td>
<td>.998</td>
<td>8.6</td>
<td>8.7</td>
</tr>
<tr>
<td>Mean cell volume, fl</td>
<td>.97</td>
<td>3.7</td>
<td>.851</td>
<td>94</td>
<td>95</td>
</tr>
<tr>
<td>Thrombocytes, 10^9/L</td>
<td>1.03</td>
<td>-7.3</td>
<td>.994</td>
<td>278</td>
<td>277</td>
</tr>
</tbody>
</table>

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CLINICAL CHEMISTRY, Vol. 29, No. 9, 1983 1693