From Table 1, one can see that, regardless of the sex of the patient, in chronic myelogenous leukemia, chronic lymphocytic leukemia, and non-Hodgkin’s lymphoma the CK activity for the prednisone-treated group is considerably lower than in the patients treated with other chemotherapeutic drugs. However, for the multiple myeloma group, the patients on prednisone (combination chemotherapy) had mean CK activities exceeding those of patients treated with other drugs, singly or in combination.

For the lymphocytic lymphoma patients, the mean CK results for the prednisone-treated group were essentially the same as for the group treated with other chemotherapy drugs. In Hodgkin’s disease, non-Hodgkin’s lymphoma, and lymphocytic lymphoma the patients on no medication (remission) had significantly higher CK results than the prednisone treated group. For the control groups (breast and lung carcinomas), none of the patients were treated with prednisone. In the control groups, the patients not taking medication had higher CK activities than the patients treated with tamoxifen, adriamycin, or other drugs.

Three cases were followed for one to two years after they went into remission. In each instance, the CK value increased as the patient’s clinical status improved, while they were receiving no chemotherapy drug.

CK values were monitored for two years in a male patient with chronic lymphocytic leukemia, who was taking prednisone and leukeran. The mean value was 12 U/L, the range 2–21 U/L.

Initially, I suspected that the lower CK values in patients visiting the chemotherapy clinic were owing to prednisone. As the study progressed, however, it was apparent that most of these patients had a lower CK activity relative to the reference interval.

I believe these data demonstrate that combination chemotherapy often results in decreased CK activity in many types of cancer.

For most such patients, the CK value is of course irrelevant to their clinical status, but it could be important if one is looking for biochemical evidence of cardiotoxicity (such as due to adriamycin) or when investigating heart or muscle disease in these patients. A pathological increase in CK could be hidden by the apparent suppression of CK values in patients who are receiving prednisone or combination chemotherapy.

References

A Non-Destructive Visualization Reagent for Use in Thin-Layer Chromatography of Sugars and Ribonucleosides

To the Editor:

To our knowledge, the old concept of visualization of pH difference has not yet been applied to detection of spots after thin-layer chromatography. In our practice a spray reagent functioning according to this principle proved to be very useful in the chromatography of compounds with diol groups, such as sugars and their derivatives.

The reagent consists of 5 mL of a 1 g/L solution of methyl red in ethanol, 29 mL of of saturated aqueous boric acid solution, and 66 mL of acetone, with the pH (i.e., the color) of the mixture adjusted to give a yellowish but not entirely yellow color. The sprayed reagent—according to the local pH values—gives different shades of red on the plate. Sugars and ribonucleosides, for example, form strongly acidic complexes with boric acid and exhibit a deep red color. Deoxyribonucleosides remain undetected by the reagent.

The reagent is nondestructive, is applicable down to the range of 0.05 μL (in terms of ribose) for detection purposes, and gives quantitatable spots for 1 to 20 μg of ribose on Merck precoated silica gel plates, as measured with a “Telechrom” videodensitometer (Chinoin Rt., Budapest, Hungary). It clearly differentiates between ribose and deoxyribonucleosides (both equally detected by ultraviolet light). It detects some other substances on the basis of either local pH differences or of changes in the adsorption characteristic of the surface produced by the substance present. In case of separation of very polar substances (such as sugars) an already-sprayed plate can be rerun after a quick wash with ethyl acetate, carrying methyl red with its front. The reagent is
not equally sensitive for all sugars, and it can not be used with ion-exchange chromatoplasts.

We believe that this reagent, or others based on a similar principle, can find their application in other branches of thin-layer chromatography.

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Stability of Prostatic Acid Phosphatase in Normal Human Sera

To the Editor:

Not only are radioimmunoassays for prostatic acid phosphatase (EC 3.1.3.2) more sensitive and specific than earlier enzymic methods (1, 2) but the immunological activity of the enzyme is more stable than the enzymic activity of the enzyme. We have examined the lability of the enzymic and immunological activities of the protein and compared them with earlier data (Figure 1 of ref. 3). We find the immunological activity of the protein to be far more labile than that report would indicate, and careful handling of the patient's sample is therefore required to avoid obtaining falsely low values for prostatic acid phosphatase.

Figure 1 shows the progressive loss of both immunological and enzymic activity of the enzyme at 28 and 37 °C. Purified prostatic acid phosphatase (4) was added to normal male sera to give a final concentration of about 25 μg/L. The radioimmunoassay used was the kit of Clinical Assays, Cambridge, MA 02139; the enzyme method was that of Worthington Diagnostics, Freehold, NJ 07728. At both temperatures, immunological activity deteriorated more slowly than enzymic activity, but the immunological activity was lost much faster than that described earlier. For example, we observed the assay value was half as large after 1.5 h at 37 °C, but Foti et al. (3) detected no loss under these conditions.

We then compared the sensitivity of several commercial radioimmunoassays to the inactivation of prostatic acid phosphatase in serum. Table 1 shows the results of assaying serum standards after various incubation conditions by use of radioimmunoassay kits commercially available from New England Nuclear, North Billerica, MA 01862; Yang Laboratory, Bellevue, WA 98005; and Clinical Assays, in addition to data on the enzyme activity. Purified prostatic acid phosphatase was added to sera from normal men to give values of about 5 and 10 μg/L. Enzyme activity was measured against standards of purified prostatic acid phosphatase. With all radioimmunoassays, 2 h at 37 °C sufficed to destroy most of the immunological activity. In each case the percentage loss of enzyme activity exceeded the loss of immunological activity. The latter was highly sensitive to temperature; it was preserved for seven days at 4 °C but was lost after 2 h at 37 °C; at 23 °C, activity was preserved for several hours.

In view of the sensitivity of prostatic acid phosphatase to temperature at the pH of serum it is important that the time the samples are kept at temperatures above 4 °C be minimized. The discrepancy between the stability of prostatic acid phosphatase observed and that previously described may be due to the method of purification of Foti et al. (1), which appears to yield a partly purified preparation (5).

Table 1. Stability of Acid Phosphatase as Assessed by Various Radioimmunoassays and by Enzyme Assay

<table>
<thead>
<tr>
<th>Incubation</th>
<th>Clinical Assays</th>
<th>Yang Labs</th>
<th>NEN</th>
<th>Enzyme assay</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>4.7</td>
<td>4.6</td>
<td>5.7</td>
<td>4.5</td>
</tr>
<tr>
<td>7 days, 4 °C</td>
<td>11.3</td>
<td>10.4</td>
<td>11.8</td>
<td>10.3</td>
</tr>
<tr>
<td>6 h, 23 °C</td>
<td>10.8</td>
<td>9.2</td>
<td>10.1</td>
<td>9.8</td>
</tr>
<tr>
<td>24 h, 23 °C</td>
<td>3.8</td>
<td>4.9</td>
<td>6.0</td>
<td>4.0</td>
</tr>
<tr>
<td>2 h, 37 °C</td>
<td>9.2</td>
<td>9.8</td>
<td>10.7</td>
<td>7.5</td>
</tr>
</tbody>
</table>


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Before-Assay Liquification of Pulmonary Mucous Secretions with N-Acetyll-L-cysteine

To the Editor:

N-Acetyll-L-cysteine is used in vitro to liquefy pulmonary secretions in cystic fibrotic subjects who are undergoing therapy with nebulized aminoglycoside, intended to eradicate the upper or lower respiratory infections that commonly occur in conjunction with chronic airway disease. The untreated raw secretion is usually viscous and heterogeneous in content and appearance.

As previously described by other authors (1), we observed that when gentamicin or tobramycin was administered, orally or parentally, the sputum of these patients contained little or none of either drug, indicating that the drug was not reaching the site of infection, but when gentamicin was administered directly into the airways via a nebulizer, the clinical status of the patient improved. Thus, a reliable method is needed for monitoring the concentra-