Reduced Glutathione Is Not Required for Measurement of α-D-Glucosidase in Human Seminal Plasma

To the Editor:

Chapdelaine et al. (1) reported the use of p-nitrophenyl-α-D-glucopyranoside as a substrate for determining α-D-glucosidase (EC 3.2.1.20, α-D-glucoside glucohydrolase; also known by the trivial name, maltase) in human seminal plasma. A very similar assay method had previously been reported (2) for determining the activity of α-D-glucosidase isolated from yeast. In this latter report, thiol reagents were included in the assay solution because their presence resulted in a 10 to 20% increase in enzymic activity relative to the activity in the absence of the thiol reagents. In the report of Chapdelaine et al., reduced glutathione was included in the assay solution, but its presence was not explained. Therefore we undertook a series of experiments to determine if reduced glutathione is required for determination of α-D-glucosidase activity in human seminal plasma. Seminal plasma from a normospermic (I), an oligospermic (II), and a vasectomized (III) man were assayed for α-D-glucosidase activity in the presence and absence of reduced glutathione according to Chapdelaine et al. (1). The results (Table 1) clearly establish that reduced glutathione is neither required for, nor enhances, human seminal plasma α-D-glucosidase activity. An additional 10 samples were selected at random from semen specimens presented at our infertility clinic and the α-D-glucosidase activity was again determined in the presence and absence of reduced glutathione. A different bottle of reduced glutathione was used in these determinations. Again, the presence of reduced glutathione had no effect on measured α-D-glucosidase activity.

Evidently, reduced glutathione is not required in the assay for human seminal plasma α-D-glucosidase, and elimination of the pipetting step required for this reagent removes a potential source of technical error from the determination.

References

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High Values for Lactate Dehydrogenase in Measles

To the Editor:

We found high values for lactate dehydrogenase (LDH; EC 1.1.1.27) in children with measles while other enzyme activities remained within normal limits. We assayed LDH in serum by an optimized ultraviolet kinetic method, using the lactate-to-pyruvate reaction, as described by Wacker et al. (1). The reagent was provided in kit form by Abbott Laboratories, Diagnostics Division, N. Chicago, IL 60064. Measurements are expressed in U/L at 37 °C. The reference interval for adults, as given by the firm, is 109–193 U/L. Isoenzymes of LDH were determined by an electrophoretic method (Isozyme-ID LDH reagents; Dade, Miami, FL 33152).

Measles was diagnosed when the typical rash occurred with coryza, cough, and conjunctivitis; Koplik's spots were generally present. The reference interval for LDH in our pediatric population is 163–240 U/L. All our patients with uncomplicated measles (ages 12 months to four years) had LDH values between 500 and 818 U/L. Activities of the aminotransferases γ-glutamyltransferase, creatine kinase, and alkaline phosphatase were within the normal range. Isoenzymes of LDH followed the normal pattern, i.e., each of them was increased proportionately.

We followed the LDH activity in some of our patients. LDH values increased even before a rash was seen. In uncomplicated measles the values became normal within 10 days. Leukocyte counts were normal or low; thrombocyte counts were normal; there was no hemolysis.

In other infections (e.g., infectious mononucleosis) we found increased LDH values, but not as high as in measles: 400–450 U/L. In very ill patients we found high LDH values, but in all these cases they were accompanied by high values for the aminotransferases and creatine kinase. Moderately increased values for LDH are currently described in cases of hepatitis, malignancy, skeletal disease, infectious mononucleosis, and acute hemolysis (2).

In infants and children with measles, LDH activity in plasma is substantially increased with no change in relative isoenzyme pattern. The origin of the increased LDH is probably leakage of the cytoplasmic enzyme through the cell wall. In children with high values for LDH and with normal activities of other enzymes, measles may be the possible cause.

References

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Interference of Hemoglobin H in the Column-Chromatographic Assay of Glycosylated Hemoglobin A

To the Editor:

The evaluation of hemoglobin A1 (HbA1) has proven to be a valuable test for monitoring blood glucose equilibrium (1). In using column-chromatographic techniques for the separation of HbA1 from the bulk of hemoglobin, one has to be aware of some conditions that interfere. For example, in infants and pregnant women, hemoglobin F (HbF) may interfere to some degree with the HbA1 assay, because HbF is co-eluted with HbA1 in all chromatographic methods.

Table 1. Effect of Reduced Glutathione on Activity of Human Seminal Plasma α-D-glucosidase

<table>
<thead>
<tr>
<th>Donor I</th>
<th>Mean (n = 7)</th>
<th>SD</th>
<th>CV, %</th>
<th>Mean (n = 7)</th>
<th>SD</th>
<th>CV, %</th>
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<tr>
<td>Glutathione</td>
<td>0.289</td>
<td>0.006</td>
<td>2.1</td>
<td>0.079</td>
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<td>0.009</td>
<td>3.0</td>
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<table>
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<th>Donor II</th>
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<tbody>
<tr>
<td>Glutathione</td>
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<td>4.5</td>
<td>0.001</td>
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<td>0.021</td>
<td>0.001</td>
<td>4.5</td>
<td>0.001</td>
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* Change per hour in absorbance at 400 nm.