
Serum lipase was measured with two immunological methods: a quantitative enzyme immunoassay (1) and a semiquantitative latex agglutination test (2) ("Enzymost Lipase" and "Rapitex Lipase," respectively; Behringwerke, Marburg, F.R.G.) in patients with acute pancreatitis.

Results for immunoreactive lipase (0–2300 μg/L) were compared with the enzyme activity of triacylglycerol lipase (EC 1.1.3.1) (Boehringer, Mannheim, F.R.G., 262346).

We saw no relation (r = 0.16) between results by the two techniques for the normal range (0–56 μg/L). For values (56–300 μg/L) such as are seen in chronic pancreatitis or in follow-up of acute pancreatitis, the correlation was better (r = 0.68). In early-admitted pancreatitis (>300 μg/L) the correlation improved (r = 0.85). These results were confirmed on studying the evolution of lipase concentrations during follow-up. In these patients the immunoreactive lipase was still above normal, although the enzyme activity lacks sensitivity or was undetectable.

We could establish a relation between the results of the Rapitex-Lipase test and the actual lipase concentration measured by the Enzymost method. In patients with acute pancreatitis, agglutination occurring within 1 min (+ + +) always corresponded with increased lipase (>650 μg/L). Agglutination occurring between 1 and 3 min corresponded with intermediate lipase values (130–470 μg/L). When time for agglutination exceeded 3 min (+ and ++), the lipase concentration of the sample was always <190 μg/L.

Finally, we observed no interference by rheumatoid factor, monoclonal immunoglobulins, or triglycerides (>7.5 g/L) in either the enzyme immunoassay or the latex test.

Thus these quantitative and qualitative immunochemical methods seem to be reliable for use in early diagnosis and follow-up of acute pancreatitis.

References

Radioimmunoassay (RIA) is not well suited for automation. Many drug analyses have been automated by using homogeneous immunoassays, but the measurement of serum thyroxin (T4) is more difficult to automate—partly because of the longer incubation times involved, partly because of the need for three reagents. The Kone Progress analyzer (Kone Oy, Espoo, Finland) is very suitable for the automation of immunoassays: incubation times can be chosen freely, up to four reagents can be pipetted, and the consumption of (expensive) reagents is very small.

We have developed a fully automated application for T4 measurement using Kone Progress and xmr® reagents (Manual Thyroxin Assay kit; Syva Co., Palo Alto, CA). In brief, 5 μL of serum sample or standard, 15 μL of water, and 20 μL of pretreatment solution (diluted threefold with water) are pipetted and mixed. After incubation for 10 min, 55 μL of reagent A (diluted 10-fold with diluent) is added and the solutions are mixed again. After incubation for 5 min, 60 μL of reagent B (diluted 11-fold with thyroxin buffer) is added; after mixing, the initial absorbance values are measured at 340 nm. After 15 min the absorbances are measured again and the results are calculated from the differences in absorbance. All the above steps the Progress analyzer does automatically.

We have compared the results of this method (y) with those of a conventional RIA (T4125I radioimmunoassay kit; Farmos Diagnostica, Farmos Group Ltd., Turku, Finland) (x). The correlation coefficient was 0.931 and the linear regression line y = 0.985x + 4.9 nmol/L (n = 95). Within-day precision (CV) varied from 1.3 to 2.8% and day-to-day precision from 2.3 to 5.2%.

Although the light-path of the instrument is 0.8 cm, the assay volume is only 150 μL. Consumption of the reagents is therefore small and the current cost per test is only $0.50 (U.S.) for duplicates. The capacity of the Kone Progress is about 50 tests per hour. We conclude that this fully automated, highly precise application is a practical and reliable alternative to RIA.