CK-MB values of >9 U/L and >4% CK-MB for potential MI.

Because the modified calibration causes an "apparent" loss of CK-MB at the low end when compared with the Kodak calibration, we needed to determine whether the modified procedure retained good sensitivity. We analyzed a series of samples from two patients who displayed clinical evidence of MI 24 to 48 h before admission. The Hybritech procedure failed to detect any significant CK-MB in any specimen, <20 and 2.6 µg/L each patient, however, the modified Ektachem 700 CK-MB procedure clearly showed a significant CK-MB and %CK-MB for both patients. The CK ranges were 169-144 and 369-221 U/L and CK-MB ranges were 13-7 and 16-3 U/L for the two. This was confirmed by the Roche Immune assay for LD1 (42% and 61%), which was also positive for suspected MI before admission (normal <34% ± 2%).

In addition we compared results of our Ektachem procedures for total CK and for %CK-MB with those of the chemistry laboratory of a nearby community hospital that uses electrophoresis to estimate %CK-MB. Thirty-two specimens from 14 of 15 cardiac patients, all considered positive by the criteria of the community hospital, were clearly positive by our modified criteria; one was considered borderline. A statistical comparison of our data (y) with theirs (x) by linear regression (y = bx + a) gave the following results for total CK, the slope (b) and intercept (a) were 2.21 and -13.7, respectively. The unexplained error (square root of s_f^2(n-2)) was 0.055. The product moment correlation coefficient (r) was 0.991. For CK-MB, the slope and intercept were respectively 0.614 and -0.26. Unexplained error was 0.088; the r value was 0.787.

Because the CK-MB assay currently can be performed in the Ektachem 700 for less than $1.00 per test for reagents, in less than 10 min, and is not susceptible to variations in technique, we thought that this procedure would be of considerable benefit to total patient care. However, the original Kodak calibration and set of criteria to evaluate CK-MB and %CK-MB results for suspected MI can lead to confusing interpretations. Modifying the calibration and using simpler criteria for evaluating results appears to be possible without loss of sensitivity or specificity.

I appreciate the editorial assistance of Dra. Frederick W. Bauer and Lewis T. Mann and the cooperation of the Clinical Laboratory of Fresno Community Hospital for the additional serum specimens.

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Spokesmen for Eastman Kodak offer the following response:

To the Editor:

We agree with Mr. Grendahl that classification of patients should not be based on CK-MB expressed as a percentage of total CK activity. With an immunoinhibition assay, CK-MB and total CK expressed in U/L are the appropriate decision parameters. Certainly, comparing %CK-MB from an immunoassay with a reference range derived from electrophoresis is not valid and would cause significant confusion in evaluating the results.

We cannot agree, however, that results from the slide CK-MB assay are "potentially misleading" if the assay is used as intended and our recommendations are followed.

Mr. Grendahl's basic concern is reporting seemingly high %CK-MB results for patients with low total CK and CK-MB activities. We concur that the %CK-MB in these cases is meaningless. For this reason, CK-MB should simply be reported as "negative". It serves no useful purpose to perform a CK-MB assay if the total CK is <65 U/L or to calculate %CK-MB if the CK-MB is below the decision value (16 U/L).

Applying these criteria to the 27 outpatient sera that were analyzed with the Ektachem analyzer, only 12 had total CK >65 U/L and thus would have had a CK-MB assay performed. Only one had CK-MB >16 U/L in which case %CK-MB would have been calculated.

We understand Mr. Grendahl's desire to have immunoinhibition and electrophoresis results match and applaud his creative approach to calibrate the slide assay. We caution against implementing such a change, however, without thoroughly evaluating the effect on predictive value. The actual number of his samples was small, and we hesitate to draw any conclusion about the effect on diagnostic performance. Our calibration procedure and decision values are based on extensive testing and evaluation.

The occasional presence of CK-BB and macro CK must also be considered when using normal serum as a calibrator. The potential for confusion can be eliminated simply by not calculating %CK-MB when the result is negative, as recommended in our protocol.

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Specimen Collection in Plastic Containers Gives Rise To Interferents in Liquid-Chromatographic Assay of Cyclosporine

To the Editor:

In many HPLC assays of cyclosporine it has been noted that some unidentified compounds are eluted near cyclosporin A and the internal standard that is usually used, cyclosporin D (1). In all these assays the mention is made of the mode of collection of the blood specimen, and in particular whether plastic is used at any stage of phlebotomy. We have found that some plastic collection tubes give rise to a series of interferents in and around the cyclosporine in the assay that we used (4). Our samples were collected in syringe-type Sarstedt Monovette containers (Sarstedt, F.R.G.). We found these interferents in all of the "Monovette" range of Sarstedt specimen containers, irrespective of the type of anticoagulant present in the tube. They were also present in some non-syringe-type containers such as the 1-mL pediatric stoppered type, once again irrespective of the type of anticoagulant present. All other types of plastic Sarstedt specimen containers investigated were free of interferents.

These interferents were not detected in 150 samples collected in various types of glass containers containing EDTA or lithium heparin anticoagulant. By comparing specimens collected simultaneously into glass and plastic, we found that these interferents were detectable immediately upon mixing in the Sarstedt plastic tubes in such concentrations as to make integration of the cyclosporin A peak totally invalid. The concentration of these interferents then increased slowly, reaching a