DETERMINATION OF TOTAL HOMOCYSTEINE IN PLASMA BY AUTOMATED FLUORESCENCE POLARIZATION IMMUNOASSAY.

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Hyperhomocysteinemia is considered as a powerful independant risk factor for atherosclerotic vascular disease. We evaluated an automated fluorescence polarization immunoassay for measuring homocysteine (HCY) concentrations in serum or plasma (IMx™ Abbott Laboratories). The new assay showed good precision at all concentration levels, e.g. intra-assay CV's of 1.3 to 1.6 % for HCY concentrations of 13.5 to 26.1 µmol/l (n = 20) and inter-assay CV's of 1.5 to 2.0 % for the same samples (n = 10). Serial dilutions of plasma samples with elevated HCY content exhibited good linearity. Lipemic, hemolytic and icteric samples showed no interference. Two samples of normal plasma were spiked with kit calibrator (50 µmol/L) at 1:1, 2:1, and 5:1 ratio, respectively. The recovery rates of the spike samples were between 99% to 101%. Excellent agreement of results was obtained in comparison to a HPLC technique (Bio-Rad Laboratories) : y (IMx) = 1.07 x (HPLC) + 0.2, r = 0.98, n = 43. In 20 presumably healthy subjects, HCY concentrations ranged from 6.7 to 12.9 µmol/L (mean ± SD : 8.7 ± 1.9 µmol/L). HCY levels were significantly higher ($p < 0.01$) in patients with angina pectoris (11.1 ± 3.4, range : 7.1 to 22.7 µmol/L). In conclusion, we have validated a rapid, accurate, precise and automated method for quantifying total HCY.