

cysteine assay on the ABBOTT IMX

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Hyperhomocysteinemia is considered as a powerful independent risk factor for atherosclerotic vascular disease. We evaluated an automated immunoassay for measuring homocysteine (HCY) concentrations in serum or plasma (IMx ABBOTT Laboratories). The biochemical principle of the assay consists of a reduction of HCY bound to albumin and to other small molecules by DTT, followed by an enzymatic conversion of the HCY to Sadenosyl-L-homocysteine (SAH). In subsequent steps, the specific monoclonal antibody and the fluorescently labelled SAH analog tracer constitute the fluorescence polarization immunoassay (FPIA) detection system.

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 $\mu\text{mol/l}$ (n=20) and inter-assay CV's of 1.5 to 2.0% for the same sample (n=10). Serial dilutions of plasma samples with elevated HCY content exhibited good linearity. Lipemic, haemolytic and icteric samples showed no interference. Two samples of normal plasma were spiked with kit calibrator (50 $\mu\text{mol/L}$) at 1:1, 2:1, and 5:1 ratio, respectively. The recovery rates of the spike samples were between 99% to 101%. Excellent agreement to results was obtained in comparison to HPLC technique (Bio-Rad Laboratories): y (IMx) = 1.07 x (HPLC) + 0.2, $r=0.98$, $n=43$. In conclusion, we have validated a rapid, accurate, precise and automated method for quantifying total HCY.