



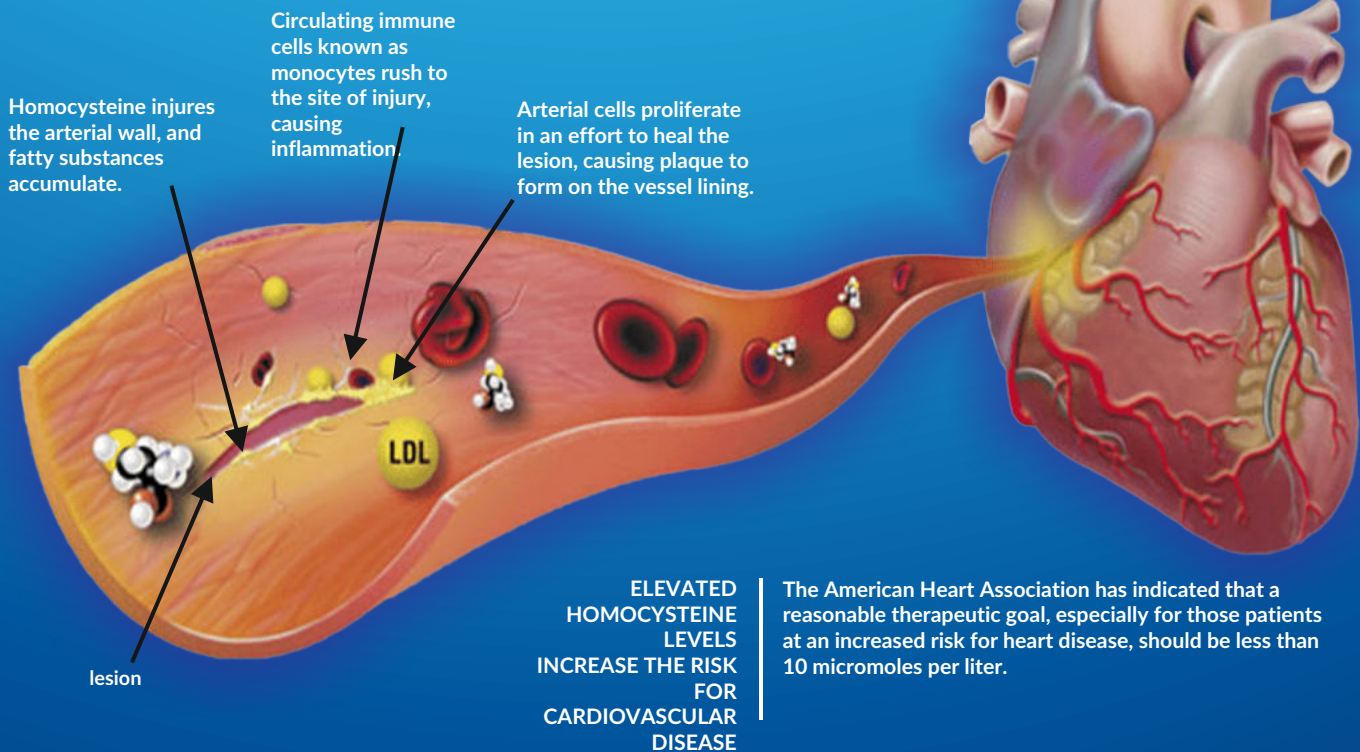
# KIVO Homocysteine

## Enzymatic Cycling Method

### Features and Advantages

- Liquid Stable, Ready to use Two Reagents
- 2 Level Calibrators Provided
- 3 Level Controls Provided (Optional)
- Fixed Time, Non Linear procedure
- (30 Sec Delay+120 Sec Measuring)
- Results are time tested and correlate with major benchmark products
- Very high linearity : 100  $\mu\text{mol/L}$
- Measuring Wavelength 340 nms
- Available as multipurpose reagents and dedicated system packs

## Homocysteine Molecule



# Kivo Homocysteine

## Enzymatic Method

### Clinical Use

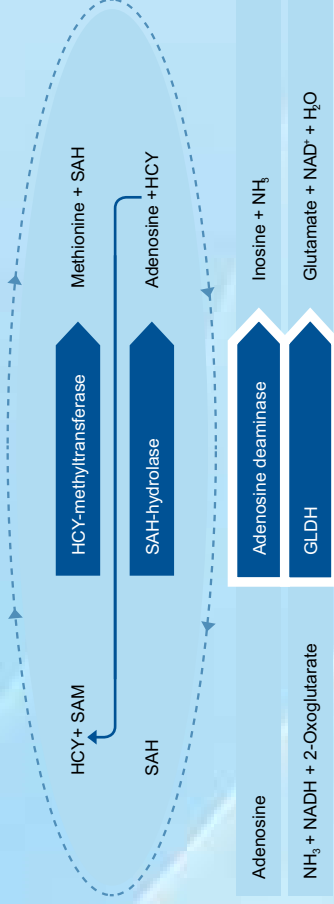
Homocysteine (HCY) is a sulfur-containing amino acid, an intermediate in the methionine cycle. Nearly 75% of total homocysteine is bound to protein through disulfide bonds, mainly albumin, whereas the rest appears in non-protein bound forms. A wide range of disorders are associated with increased concentrations of total homocysteine, e.g. birth defects, pregnancy complications, psychiatric disorders and cognitive impairment in the elderly. Accumulating evidence suggests that elevated homocysteine is an independent risk factor for stroke and cardiovascular disease; elevated levels can be lowered by increasing intake of folic acid and B vitamins. Elevation of homocysteine concentration (e.g. from 15 to 20 µmol/L) contributes to the pathogenesis of atherosclerotic vascular disease by increasing proliferation of vascular smooth muscle cells, endothelial dysfunction, oxidative damage, increased synthesis of collagen and reduction of arterial wall elasticity.

Homocysteine concentrations increase during life. Certain factors are linked to total homocysteine concentrations. Age, sex, racial and ethnic differences, genetic, dietary and life style are strong determinants. Concentrations are higher in the elderly and greater in men than in women.

### Recommendations

HCY measurement in high-risk patients and their relatives are recommended. Furthermore, HCY determinations should be used to assess the total risk profile of patients with manifest cardiovascular disease.

### Test Principle



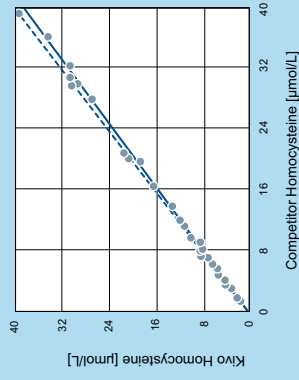
The Kivo Homocysteine assay is based on an enzymatic cycling technique leading to significant amplification of the detection signal. In a first step, oxidized total homocysteine is reduced to free homocysteine (HCY) which reacts with the co-substrate S-adenosylmethionine (SAM) to form methionine and S-adenosyl homocysteine (SAH). SAH is hydrolysed into adenosine and HCY. The formed HCY is cycled into the homocysteine conversion reaction to amplify the detection signal whereas the adenosine is immediately hydrolysed into inosine and ammonia which is processed by glutamate dehydrogenase with concomitant conversion of NADH to NAD<sup>+</sup>. The decrease of NADH is measured at 340 nm and is proportional to the homocysteine concentration in the sample.

## Kivo Homocysteine – Features & Benefits

- Enzymatic cycling method
- Liquid stable, ready-to-use reagent with appropriate liquid stable calibrators and controls
- Measuring range up to 100 µmol/L
- Use of serum or EDTA/heparin plasma
- No interferences from thio-containing substances like cystathionine
- Long on-board stability of 6 weeks
- Calibrator standardized to reference material NIST SRM 1955
- Good correlation to other enzymatic methods and HPLC
- Applicable on any clinical chemistry analyzer

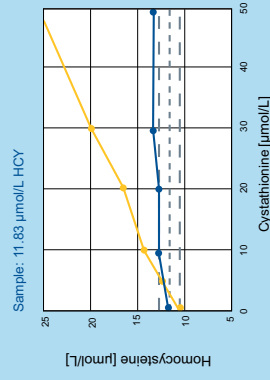
## Performance Data

### Method Comparison



n = 72; Passing / Bablok Regression  
Y = 1.012x - 0.162 µmol/L; r = 0.978

### Data on Interferences



— Kivo Homocysteine  
— Competitor  
- - - plus/minus 10%  
- - - target

No interference by elevated levels of cystathionine which are often increased in patients with renal failure.

