

# HOMOCYSTEINE

*Homocysteine is an amino acid that functions as an intermediate in methionine metabolism. It can rise in response to nutritional deficiencies of B12, folate, B6, or betaine. Elevated levels of homocysteine is associated with damaged endothelium, increased platelet aggregation and formation of atherosclerotic lesions. Elevated homocysteine and other inflammatory markers are indicators of chronic inflammatory conditions like cardiovascular disease, hypercholesteremia and diabetes.*

Cardiovascular disease remains the leading cause of mortality and morbidity in developed countries, and is rapidly becoming the leading cause of death in developing areas as well. A rapidly aging population presents an ever growing need for accurate and comprehensive assessment of the biochemical factors associated with CVD.

## SYMPTOMS AND CONDITIONS ASSOCIATED WITH HOMOCYSTEINURIA

Alcohol withdrawal seizure	Hypertension
Autism	Increased breast cancer risk
CVD - thromboembolism, atherosclerosis and myocardial infarction	Neural tube and other birth defects
Colorectal neoplasias	Peripheral neuropathy
Dementia and memory loss	Reduced lean body mass & increased body fat
Depression and irritability	Schizophrenia
Elevated homocysteine	Stroke
Heart disease	Allergies, sinus problems
Stress	Joint pain

Elevations in homocysteine can be caused by:

- Genetic aberrations of the enzymes involved in the synthesis of methionine or cysteine. MTHFR is a genetic marker of methylation. 10% of the world population have a SAME synthase due to MAT1A variant.
- Deficiency of the necessary co-factors like vitamin B6, B12 and folic acid involved in this pathway.
- Co-morbid conditions such as smoking, hypothyroidism, malignancies, excess caffeine.
- Drug use namely methotrexate, oral contraceptive pill, metformin, and anticonvulsant medications.

- Women have 10-15% less homocysteine during their reproductive years.
- The average homocysteine levels tend to be significantly higher in vegans and vegetarians possibly due to folate deficiency.

#### SYMPTOMS AND CONDITIONS ASSOCIATED WITH MTHFR POLYMORPHISMS

Alcohol withdrawal seizure	Hypertension
Autism	Increased breast cancer risk (women >55 years)
CVD - thromboembolism, atherosclerosis, and myocardial infarction	Neural tube and other birth defects
Colorectal neoplasias	Peripheral neuropathy
Dementia and memory loss	Reduced lean body mass & increased body fat
Depression and irritability	Schizophrenia
Elevated homocysteine	Stroke

### HOMOCYSTEINE (whole blood) [Test code: 4007]

- ❖ Homocysteine

#### Other homocysteine tests available:

- **Cardiovascular Profile – Comprehensive [4001]:** Cholesterol, Triglycerides, HDL, LDL, ratios, Fasting Glucose, Homocysteine, Apolipoproteins A & B, Lipoprotein (a), Fibrinogen, hsCRP
- **Cardiovascular Profile – Comprehensive 2 [4027]:** Cholesterol, Triglycerides, HDL, LDL, ratios, Fasting Glucose, Homocysteine, Apolipoproteins A & B, Lipoprotein (a), Fibrinogen, hsCRP; LipoScreen LDL subfractions (x7)
- **Pfeiffer Profile – Basic (blood) [3415]:** Plasma Zinc, serum Copper, Zn:Cu ratio, Ceruloplasmin, % free Copper, whole blood Histamine, Homocysteine, Vitamin D3
- **Pfeiffer Profile – Comprehensive (blood) [3416]:** Plasma Zinc, serum Copper, Zn:Cu ratio, Ceruloplasmin, % free Copper, whole blood Histamine, Homocysteine, Vitamin D3; SAME, SAH, SAME:SAH ratio
- **Folate Metabolism Profile [5102]:** 5-methyl tetrahydrofolate (5MTHF), Folinic acid, Tetrahydrofolate (THF); active Vitamin B12, serum Folate, Homocysteine
- **Methionine Metabolism Profile [5103]:** S-Adenosyl Methionine (SAME), S-Adenosyl Homocysteine (SAH), SAME:SAH; active Vitamin B12, serum Folate, Homocysteine; Methionine
- **Advanced Methylation Genetics (buccal swab) [8009]:** SNPs for MTHFR, MTR, MTRR, AHCY, COMT

#### How to order a test kit:

To order a test kit simply request the test name and/or test code on a NutriPATH request form test code and have the patient phone NutriPATH Customer Service on 1300 688 522.



Phone 1300 688 522 for further details  
[www.nutripath.com.au](http://www.nutripath.com.au)