NutriPATH
INTEGRATIVE PATHOLOGY SERVICES

METHIONINE METABOLISM PROFILE

Methionine is an amino acid necessary for utilisation of methyl groups from the folate cycle and balance homocysteine levels. Methionine synthase (MTR) requires vitamin B12 and an enzyme, methionine synthase reductase, which is produced from the MTRR gene. ***Homocysteine, a sulphur-containing amino acid, is a metabolite of the essential amino acid methionine, and exists at a critical biochemical intersection in the methionine cycle between (S-adenosylmethionine), the indispensable ubiquitous methyl donor, and vitamins B12 and folic acid. High blood levels of homocysteine signal a breakdown in this vital process, resulting in far-reaching biochemical consequences.***

The Methylation Cycle is a biochemical pathway that manages or contributes to a wide range of biochemical functions: detoxification, supporting DNA (turning genes on and off), producing energy, reducing inflammation, synthesising neurotransmitters, homocysteine metabolism, protein methylation, phase 2 liver detoxification and supporting immune function. Inadequate methylation capacity can lead to birth defects, depression, cognitive decline, and cancer. Impaired methylation has even been associated with autism. Support of methylation markers has been associated with rapid return of speech, improvement of behaviour in ADD and ADHD spectrums.

CONDITIONS ASSOCIATED WITH IMPAIRED METHIONINE & METHYLATION DEFECTS	
Allergies	Diabetes
Autism	High folate supplementation
Cancer	Infertility, Pre-conception care
Chronic Fatigue Syndrome	Mental health disorders
Cognitive decline	Oestrogen dominance
Cardiovascular disease	Schizophrenia

Significant markers of methionine metabolism assessment:

- **SAMe** (S-adenosylmethionine) - a synthetic form of a compound formed naturally in the body from the essential amino acid methionine and adenosine triphosphate (ATP), the energy-producing compound found in all cells in the body.

- **SAH** (S-adenosyl Homocysteine) – amino acid derivative and modulator of the activated methyl cycle and cysteine biosynthesis and product of SAMe-dependant methylation of biological molecules, including DNA, RNA, histones and other proteins.
- **Vitamin B12** - essential for recycling homocysteine and the formation of methyl donors involved in cardiovascular function, sleep, blood cell formation, and nerve function.
- **Folate** - a substrate and vitamin B12 is a coenzyme for the formation of MTHF that depends on the regeneration of THF, the parent compound in the homocysteine-to-methionine conversion.
- **Homocysteine** - an amino acid associated with atherosclerosis that can become elevated when there is need for folate, vitamin B6 and/or vitamin B12.
- **Methionine** - an amino acid necessary for utilisation of methyl-groups from the folate cycle and balance homocysteine levels.

METHIONINE METABOLISM PROFILE [Test code: 5103]

- S-Adenosyl Methionine (SAMe), S-Adenosyl Homocysteine (SAH), SAMe:SAH; active Vitamin B12 (holotranscobalamin), serum Folate, Homocysteine, Methionine

Other methylation tests available:

- **Methylation Profile [5101]:** S-Adenosyl Methionine (SAMe), S-Adenosyl Homocysteine (SAH), SAMe:SAH ratio; 5-methyl tetrahydrofolate (5MTHF), Folinic acid, Tetrahydrofolate (THF)
- **Folate Metabolism Profile [5102]:** 5-methyl tetrahydrofolate (5MTHF), Folinic acid, Tetrahydrofolate (THF); active Vitamin B12, serum Folate, Homocysteine
- **SAMe & SAH [5105]:** S-Adenosyl Methionine (SAMe), S-Adenosyl Homocysteine (SAH), ratio
- **Vitamin B12 & Folate [6013]:** Active Vitamin B12, serum Folate
- **Glutathione, Oxidised [5107]:** Glutathione, oxidised
- **Glutathione, Reduced [5012]:** Glutathione, reduced
- **Histamine (whole blood) [4006]:** Histamine
- **Homocysteine [4007]:** Homocysteine
- **Advanced Methylation Genetics (buccal swab) [8009]:** SNPs for MTHFR, MTR, MTRR, AHCY, COMT
- **MTHFR [5018]:** Methylenetetrahydrofolate reductase (MTHFR) C677T & A1298C SNPs

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.

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Integrative Pathology Services

Phone 1300 688 522 for further details
www.nutripath.com.au