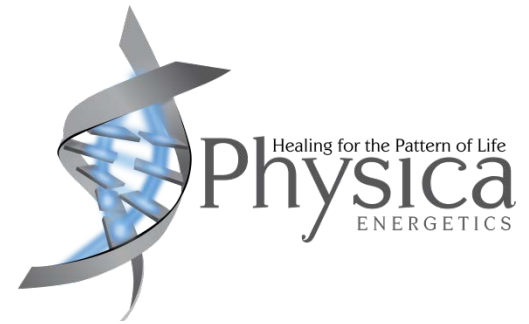




Methylation Cycles and Pathways INTER-QUADRANT

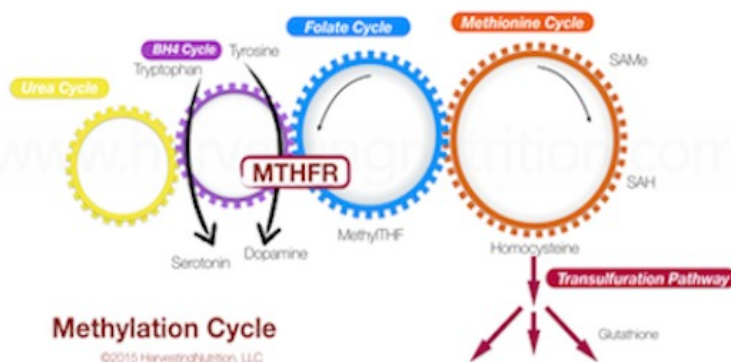


Dear Colleague,

Methylation is a central metabolic process that takes place in every cell and in each of the body's vital organs. Methylation is involved in almost every bodily biochemical reaction and occurs billions of times every second in our cells. If the methylation cycle is impaired the immune system malfunctions, the detoxification system malfunctions, the ability to heal and repair is reduced and the anti-oxidant system malfunctions.

In short, methylation is the biochemical process in which certain molecules transfer or donate a methyl group (-CH₃) to other molecules. This donation of the one carbon molecule comes from other larger molecules called methyl donors, such as methionine, S-adenosylmethionine (SAMe) and betaine. They transfer this molecule to other methyl acceptors with the help of methyl carriers that are primarily supplied as folates or vitamin B12. Important acceptors include nucleic acids/DNA, proteins, phospholipids and biological amines.

As is clearly evident, methylation clarification is central to restoring cellular communication which is the major reason we placed this vital element as an "INTER QUADRANT" factor between, but limited, to Quadrant #1 and Quadrant #2.



MTHFR is a genetic mutation or snp (single nucleotide polymorphism) that can be identified with blood or saliva testing contributing to conditions as diverse as cardiovascular disease, cancer, autism, infertility and autoimmunity.

The Methylation Cycle used to be called the Methionine Cycle but Dr. Amy Yasko (Ph.D. in molecular biology/immunology and infectious diseases) has now indicated 5 biochemical cycles that are intertwined.



Methylation Cycles and Pathways INTER-QUADRANT

Methylation Cycle is Made Up of 5 Major Biochemical Pathways:

1. *BH4 Cycle* – this involves the synthesis of the neuro-transmitters tryptophan into serotonin and tyrosine into dopamine
2. *Folate Cycle*- this is how we process folate from the diet which significantly involves B12
3. *Methionine Cycle* and the processing of SAME
4. *Transulfuration Cycle* from homocysteine
5. *Urea Cycle* - how we process ammonia

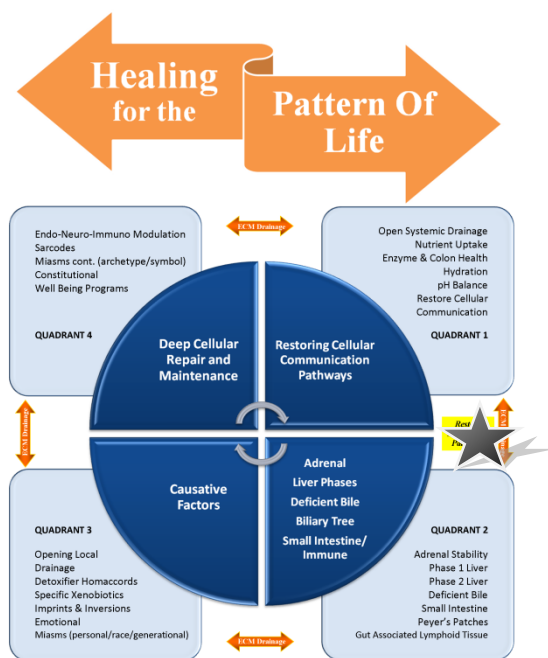
If one cycle is not operating properly, it will affect the others. There are several critical functions of these cycles:

1. *Detoxification*
2. *Immune function – building of immune cells, NK cells and T cells*
3. *Energy balance*
4. *Hormonal balance and mood*
5. *Sleep*
6. *Controls inflammation*
7. *Production, synthesis and repair of RNA and DNA and DNA protection*
8. *Helps to metabolize histamine*

They do much more but this gives you the general idea of how important this is.

The **Methyl-B12 Liposome Spray** monograph is attached to this email to provide you with valuable guidance to make wise and educated choices. *Note: the correct forms of the core ingredients in this liposomal formula.* All the factors and cofactors need to be available to keep the cycles spinning productively. Please refer to the website for a more in-depth discussion.

We are always here to provide you with encouraging support, clinical discussion and counsel to assist you in your service to your practice.



Sincerely,

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Methyl-B12

Nanosphere Liposome Spray
60 mL Nutritional Tincture NPN 80029539

**UPDATED FOLATE (as Quatrefolic™
(6S)-5-Methyltetrahydrofolic acid
glucosamine salt).** Italian sourced: Quatrefolic
is a registered trademark of Gnosis S.p.A



Matrix Nutritional Series Methylation, Homocysteine, Metals, Autistic Spectrum

Traditional Keynotes:

- Methylation Cycles / Pathways
- Homocysteinemia
- Mercury Toxicity
- ADD / ADHD / Aspergers / Autism
- Metabolic Syndromes
- Folic Acid B12 Anemia
- Adrenal / Thyroid Insufficiencies
- Cardiac insufficiencies
- Immune / Hormonal Imbalances
- Depression, Anxiety, Dementia
- Asthma
- Neuropathy / Bell's palsy
- Blood Sugar
- Hepatitis
- Multiple Sclerosis

Complementary Remedies:

- Bio-Omega 3 / Omega GOLD
- HepataGest
- BioHealth Matrix
- Laminaria
- ADR Life Force
- Glutathione GSH Liposome
- Solray-D Liposome Spray

Dosage:

5 sprays sublingually or in warm water daily, or as directed by a Health Care Practitioner

Ordering Information

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Phone: 519.668.0873
Toll Free: 800.404.4163
Fax: 519.668.0584 / 877.668.0584
Email: orders@physicaenergetics.com

Orders received before 2pm EST will be shipped the same day

Clinical Consultation & Customer Care

for Licensed Healing Arts' Professionals Only

Phone: 519.668.0958
Email: info@physicaenergetics.com

www.physicaenergetics.ca

Customer Service Hours:

8:30 am—5:30 pm EST
Monday—Friday

Matrix Nutritional Series was designed as an eclectic offering for the Physica Energetics line of remedies primarily to assist in the "reactivation of the mesenchyme" (Dr. Reinhold Voll), via the nutritional complement pathways. These pathways are present in every system throughout the body and require balanced attention. In keeping with the principles of BioEnergetic Medicine, the remedies nourish and support these systems without punishing them with overstimulation or imbalancing factors, which, ultimately, is counterproductive. This approach has been carefully and respectfully designed to provide the necessary natural (organic where available), synergistic factors in proper energetic and biochemical ratios, to ensure assistance towards yielding a deep and lasting result. They are not to be confused with replacement therapy nutraceuticals that may seem to help for the moment, until the patient stops taking them or the condition is driven deeper. These remedies honour The Legacy of BioEnergetic Medicine, and are known by both patient and practitioner to be exceptionally effective.

Methylation is a process that occurs @ one billion times per second taking place in the liver during phase two detoxification. Methylation occurs when SAME (S-adenosine methionine) donates a methyl group, which is then attached to the molecule that is being detoxified. SAME then becomes homocysteine. **Vitamin B6, B12, TMG and folic acid are necessary to reduce homocysteine and keep the methylation processes occurring.**

This metabolic process taking place in every cell and vital organ that uses methyl groups to perform functions that include: regulating levels of histamine (which is a key factor in allergic responses), protecting and regulating DNA, promoting detoxification, protein and neurotransmitter production as well as other brain functions.

It makes membranes that surround each cell more fluid. Technically, it starts with the small parts of molecules called methyl groups. A methyl group is a carbon atom with 3 hydrogen atoms attached to it. Movement of these carbon atoms goes on in every cell and tissue of the body. Methylation is what occurs when the body takes one substance and turns it into another, so it is detoxified and can be excreted from the body.

Methylation acts as an on/off switch that allows the body to learn how to respond to environmental change. It represents the only cellular pathway that affects both adaptability and structural integrity.

Vitamin B12 is a water soluble vitamin necessary for the maintenance of a healthy nervous system and for the metabolic utilization of fats and proteins. **Vitamin B12** is also essential for the synthesis of DNA during cell division and therefore is especially important for rapidly multiplying blood cells. In addition, adequate intake of Vitamin B12, along with Folic Acid and Vitamin B6, encourages healthy serum homocysteine levels, thereby

Five Liposome Spray Dose Contains:	
*Folate (as Quatrefolic™ (6S)-5-Methyltetrahydrofolic acid glucosamine salt	400 mcg
Vitamin B12 (as methylcobalamin)	1000 mcg
Vitamin B6	2 mg
Trimethylglycine (betaine)	200 mg

supporting cardiovascular health. TMG (trimethylglycine) works along with Folic Acid, B6, and B12 in the metabolism of homocysteine.

Pernicious anemia is an autoimmune disease that affects the gastric mucosa and results in gastric atrophy. This leads to the destruction of parietal cells, achlorhydria, and failure to produce intrinsic factor IF resulting in vitamin B12 malabsorption. If pernicious anemia is left untreated, it causes vitamin B12 deficiency, leading to megaloblastic anemia and neurological disorders, even in the presence of adequate dietary intake of vitamin B12.

High homocysteine has been implicated and shown to be elevated in Alzheimer's disease, depression, neurological aging, cancer, arteriosclerosis, anemia, osteoporosis, arthritis, rheumatoid arthritis, lupus, eye disorders, Chronic Fatigue Syndrome, heavy metal toxicity, ADD/ADHD, Autism, and many others. Homocysteine destroys brain and bone proteins.

Methylation helps "flush out" harmful fat which helps regulate weight and keeps fat from accumulating in the arteries. It is also essential to the production of **melatonin**, necessary for sleep cycles and hormonal balance.

Methylation is the main way the body clears and eliminates histamine, which can cause inflammation, allergic reactions, and even asthma.

It plays an important role in keeping estrogen levels **balanced** (high levels are attributed to breast cancer). Poor methylation takes the methyl groups from genes to use for other purposes. If that methyl group was removed from a cancer gene, it may begin to express cancer. **This is how methylation turns off oncogenes and metastatic promoter genes.**

The overall effect here is that if the methylation cycle is impaired the immune system malfunctions, the detoxification system malfunctions, the ability to heal and repair is reduced and the anti-oxidant system malfunctions.

As is clearly evident, methylation clarification is central to restoring cellular communication.

Methyl-B12

Synergistically Formulated Ingredients

Vitamin B12 (methylcobalamin) works with folate in many body processes including the synthesis of DNA, red blood cells, and the maintenance of the myelin sheath that surrounds nerve cells. A B12 deficiency results in pernicious anemia, impaired nerve function, and impaired mental function. Folate is one of the most essential nutrients for all normal cell growth and replication. It also has a major role in DNA synthesis, without it cells do not divide properly. The benefit of folate and B12 supplementation results in a reduction of body concentrations of homocysteine.

Homocysteine is implicated in a variety of conditions, including atherosclerosis, Multiple Sclerosis, osteoporosis, and mental decline to name a few.

We've updated our 5-MTHF with Quatrefolic™ (6S)-5-Methyltetrahydrofolic acid glucosamine salt) sourced from Italy (*Gnosis S.p.A*) due to its high water solubility, improved bioavailability, long lasting stability, established safety and higher formulation flexibility. Folate optimizes cardiovascular health, nervous system health, normal cell growth and energy production. It also plays a role in brain energy and helps to promote peak mental sharpness and clear memory. Folate serves as a donor of methyl groups in many nervous system and metabolic processes including the conversion of homocysteine to methionine, the synthesis of monoamine neurotransmitters (serotonin, dopamine and epinephrine), the production of melatonin, and the synthesis of DNA. Folate deficiency is linked to depression, atherosclerosis, and birth defects. Folate supplementation should always include B12 because folate can hide an underlying B12 deficiency, which can result in permanent nerve damage. **Genetic Mutation:** an increasing population has the inability to properly utilize folic acid. Not only will genetically-affected individuals fail to benefit from plain folic acid but a build-up of unmetabolized folic acid has adverse health effects. One of these is suppression of natural killer cell activity - immune cells that are very active in protecting against cancer and viral infections. Therefore the active, most highly bio-available form **(6S)-5-Methyltetrahydrofolic acid glucosamine salt**, is vital.

Absorption of B12 is a complex situation. Deficiencies in pepsin, hydrochloric acid, R-protein, pancreatic enzymes, intrinsic factor, calcium and cell receptors can all lead to B12 deficiency through blocked absorption. Once in the blood, transport proteins bind to B12 and deliver it to the cells. Within the cells, enzymes liberate B12 from the protein complex and convert it to its **coenzyme form: methylcobalamin**. Supplementation with the coenzyme form methylcobalamin can overcome B12 deficiency in the cells caused by lack of, or malfunction of, conversion enzymes. This active form of B12, methylcobalamin, is essential for recycling homocysteine and the formation of methyl donors involved in cardiovascular function, sleep, blood cell formation, and nerve function. **The nano-sphere liposome delivery system ensures comprehensive assimilation and target accuracy.**

Multiple Sclerosis is an autoimmune demyelination disease. Myelin, the protective sheath around nerves, is destroyed and a common cause is a higher than average homocysteine level. Elevated **homocysteine**, as a result of folate and B12 deficiency, is **toxic to the nervous system** and has been linked to depression, schizophrenia, multiple sclerosis, Parkinson's disease, Alzheimer's disease and cognitive decline in the elderly. People with multiple sclerosis don't metabolize B12 properly which leaves them more vulnerable to nerve damage. Several studies have shown that vitamin B12 levels in serum, red blood cells, and CNS are low in multiple sclerosis.

A B12 deficiency impairs the immune system's ability to fight off pathogens and viruses. Viral hepatitis (**HEP-Tox**) has been treated for years with vitamin B12 to assist in decreasing viral damage.

Trimethylglycine (TMG): Also known as betaine, trimethylglycine (TMG) is an excellent resource of methyl groups - molecules that comprise of one carbon atom and three hydrogen atoms. Trimethylglycine is found particularly in vegetables like beets, spinach, and broccoli. The presence of trimethylglycine in the body initiates the methylation process whereby the methyl groups neutralize detrimental materials in the system and translate them into supportive substances. For instance, **homocysteine**, an amino acid found in the body, is a prospective destructive substance and is restricted or deactivated by the methyl groups. It is an accepted fact that the presence of higher levels of homocysteine in the system is a hazard as it's capable of giving rise to **several heart diseases**. Several researches have confirmed that people possessing very high levels of homocysteine in their systems are 3 times more susceptible to heart attacks than people having lower levels. In addition, several studies have found that high levels of homocysteine are also often responsible for birth defects, depression, particular forms of cancer, and even Alzheimer's.

It is well established that the presence of high levels of homocysteine is a health hazard for everyone. However, the good news is that it is comparatively easier for a person to reduce the homocysteine levels in the system by ingestion of methyl-rich trimethylglycine or TMG. It may be noted here that the risk of high levels of homocysteine are deactivated as the presence of methyl groups in trimethylglycine (TMG) transforms homocysteine into methionine - an amino acid that is advantageous for the body. Presence of high levels of homocysteine in the body can also be reduced by taking a healthy diet comprising plenty of fruits and vegetables and by staying away from all kinds of processed foods. Contrarily, regular smoking, ingestion of heavy amounts of saturated fats as well as taking birth control pills can increase the levels of homocysteine in the body.

TMG also **protects the liver** from the adverse consequences of alcohol over use. Studies indicate that this is probably done by stimulating S-adenosylmethionine (SAME). TMG is also beneficial for non-alcoholic varieties of fatty liver such as non-alcoholic steatosis (cellular retention of fat). Many researchers as well as herbal practitioners have recommended the use of trimethylglycine as it is an inexpensive replacement of SAME for conditions like osteoarthritis and depression.

Other causes of vitamin B12 deficiency include surgical resection of the stomach or portions of the small intestine where receptors for the IF (intrinsic factor) -B12 complex are located. Conditions affecting the **small intestine, (GALT Fortifier)** such as malabsorption syndromes (**celiac disease** and tropical sprue), may also result in vitamin B12 deficiency. Because the pancreas provides critical enzymes as well as calcium required for vitamin B12 absorption, **pancreatic insufficiency (GlycoPan-Tox)** may contribute to B12 deficiency. Since vitamin B12 is found only in foods of animal origin, a strict **vegetarian (vegan) diet** has resulted in cases of vitamin B12 deficiency. Alcoholics may experience reduced intestinal absorption of vitamin B12. Individuals with acquired immunodeficiency syndrome (AIDS) appear to be at increased risk of deficiency, possibly related to a failure of the IF-B12 receptor to take up the IF-B12 complex. Long-term use of **acid-reducing drugs (LIFE Force)** has also been implicated in vitamin B12 deficiency.

Atrophic gastritis is thought to affect 10%-30% of people over 60 years of age, and the condition is frequently associated with infection by the bacteria, *Helicobacter pylori*. **H. pylori infection** induces chronic inflammation of the stomach, which may progress to peptic ulcer disease, atrophic gastritis, and/or gastric cancer in some individuals. The relationship of *H. pylori* infection to atrophic gastritis, gastric cancer, and vitamin B12 deficiency is presently an area of active research.

References:

- Tucker KL, Rich S, Rosenberg I, Jacques P, Dallal G, Wilson PW, Selhub J Plasma vitamin B-12 concentrations relate to intake source in the Framingham Offspring study. Am J Clin Nutr. 2000 Feb;71
The Coenzyme Forms of Vitamin B12: Toward an Understanding of their Therapeutic Potential Gregory Kelly, N.D.
Ann Pharmacother 1999 May
Cooper BA, Rosenblatt DS. Inherited defects of vitamin B12 metabolism. Ann Rev Nutr 1987
Okuda K, Yashima K, Kitazaki T, Takara I. Intestinal absorption and concurrent chemical changes of methylcobalamin. J Lab Clin Med 1973;81:557-567.
Regland B, et al. Homocysteinosis in the central nervous system in patients with fibromyalgia/chronic fatigue syndrome. Abstr Intern Conf Homocysteine Metabol 1995; Dromoland Castle, County Clare, Ireland, July 2-6.
Suggestions for Treatment of Chronic Fatigue Syndrome (CFS): The Simple Approach, the Glutathione Depletion—Methylation Cycle Block Hypothesis for the Pathogenesis of CFS by Richard A. Van Konyenburg, Ph.D.