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Premiere Health & Wellness

The Mall, Oposite Madinat Jumeirah Hotel, Dubai,UAE

**Getchecked Clinic** is your premier destination for luxury advanced wellness services, offering everything from basic health screenings to advanced genetic testing, all tailored to your unique health needs.

**Our Services**: General Health, Genetic Testing, Preventative Health AI Diagnostic, Diet & Nutrition, Physio-Rehab, Weight Loss, IV Therapy, Women's Health, Men's Health, Travel Vaccines, Hijama, Gut Microbiome, Corporate Wellness, Sexual Health

Luxury,Convenient, Safe and Secure

# DEMO METHYLATION PANEL 01/01/2011

## PATIENT

NAME: **DEMO METHYLATION PANEL** GENDER: **Female** DATE OF BIRTH: **01/01/2011** AGE: **11**

PHONE NUMBER: **18663641111**
ADDRESS: **The Mall – Oposite Burj Al Arab – Dubai**

EMAIL: **reports@gettcheckedclinic.com**

ACCESSION ID: **2204050012**
SPECIMEN COLLECTION TIME: **04-04-2022 09:33**
SPECIMEN RECEIVED TIME: **04-05-2022 03:33**

FINAL REPORT TIME: **06-28-2022 15:34**

FASTING: **FASTING**

## PROVIDER

PRACTICE NAME: **Getchecked T4 Practice**
PROVIDER NAME: **Demo Client, DDD (999994)**
ADDRESS: **TEST STREET, TEST CITY, KY- 42437.**

The comments in this report are meant only for informational purposes and do not constitute medical advice.
Please consult your physician for any medication, treatment or life style management.

Getchecked Wellness Test Index





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# Methylation Panel

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Getchecked Wellness is pleased to present to you, 'Methylation Panel', to help you make healthy lifestyle, dietary and treatment choices in consultation with your healthcare provider. It is intended to be used as a tool to encourage a general state of health and well-being.

The Getchecked Methylation Panel is a test to measure levels of various genetic mutations present in an individual's body which could affect methylation pathways. The panel is designed to give a complete picture of these predispositions along with the actual measure of the homocysteine, Vitamin B9(Folate) and Vitamin B12.

Interpretation of Report: The genetic mutations along with actual homocysteine, folate and Vitamin B12 level are provided in the report. The report starts with suggestions to diet, supplements, exercise and lifestyle choices that can be considered between the provider and the patient. The mutation alleles are indicated with a + symbol and wild type alleles are indicated with a – symbol. Risk associated variants are indicated with red and alleles with no risk are indicated with green. All contents provided in the report are purely for informational purposes only and should not be considered medical advice. Any changes based on the information provided should made in consultation with the clinical provider.

All contents provided in the report are purely for informational purposes only and should not be considered medical advice. Any changes based on the information provided should be made in consultation with the ordering provider, primary care provider, specialist, or geneticist as appropriate. Pediatric ranges have not been established for this test.

The Getchecked Wellness platform provides tools for you to track and analyze your general wellness profile. Testing for the NutriPro panel is performed by Getchecked America, a CLIA certified lab CLIA#:05D2078809. Getchecked Wellness provides and makes available this report and any related services pursuant to the Terms of Use Agreement (the "Terms") on its website at www.getcheckedclinic.com By accessing, browsing, or otherwise using the report or website or any services, you acknowledge that you have read, understood, and agree to be bound by these terms. If you do not agree to accept these terms, you shall not access, browse, or use the report or website. The statements in this report have not been evaluated by the Food and Drug Administration and are only meant to be lifestyle choices for potential risk mitigation. Please consult your physician for medication, treatment, diet, exercise, or lifestyle management as appropriate. This product is not intended to diagnose, treat, or cure any disease or condition.

# Precision Diet

## Suggestions

| LAST NAME | FIRST NAME | GENDER | DATE OF BIRTH | ACCESSION ID | DATE OF SERVICE |
|---|---|---|---|---|---|
| METHYLATION | DEMO | FEMALE | 2011-01-01 | 2204050012 | 04-04-2022 09:33 |

Precision Diet Suggestions are designed to provide food and nutrient support for methylation pathways and should be further personalized according to medical history and clinical findings. Patients should consult a knowledgeable healthcare provider before implementing any diet modifications.

| Precision Diet Suggestions | |
|---|---|
| Fruits | Apple, Papaya, Avocados, Strawberry, Avocado, Orange, Cantaloupe, Banana |
| Vegetables | Broccoli, Lettuce, Turnip greens, Brussels sprouts, Asparagus, Spinach, Romaine lettuce |
| Legumes | Red beans, Green peas, Cow peas, Kidney beans, Black-eyed peas |
| Animal Protein | Beef liver |
| Dairy | Cheddar cheese, Yogurt, Eggs, Milk |
| Fiber | Quinoa, Tempeh |





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# Precision Supplement

## Suggestions

| LAST NAME | FIRST NAME | GENDER | DATE OF BIRTH | ACCESSION ID | DATE OF SERVICE |
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Precision Supplement Suggestions form, dosage, frequency of use, and duration of use should be further personalized according to medical history and clinical findings. Patients should consult a knowledgeable healthcare provider before implementing any supplementation.

### Precision Supplement Suggestions

| | Suggested Supplementation | Provider Recommended |
|---|---|---|
| Vitamin B9 (Folate) | 400 mcg/day | |
| Methyl folate | 1-15 mg/day | |
| Methylcobalamin | 1500 mcg/day | |
| Vitamin B2 | 1.3 mg/day | |
| Vitamin B6 | 1.3 mcg/day | |
| Choline | 550 mg/day | |

# Methylation Panel - Summary

| LAST NAME | FIRST NAME | GENDER | DATE OF BIRTH | ACCESSION ID | DATE OF SERVICE |
|---|---|---|---|---|---|
| METHYLATION | DEMO | FEMALE | 2011-01-01 | 2204050012 | 04-04-2022 09:33 |

## Methylation Results Summmary

| Gene Name | SNP ID | Genetic Risk | Potential Impact |
|---|---|---|---|
| MTHFR (677C>T) | rs1801133 | Normal | |
| MTHFR(1298A>C) | rs1801131 | Elevated | Impaired Vitamin B9(Folate) metabolism |
| MAT1A | rs3851059 | Normal | |
| SHMT1 | rs1979277 | Normal | |
| GNMT | rs10948059 | Normal | |
| BHMT | rs3733890 | Normal | |
| MTRR | rs1801394 | Normal | |
| | rs162036 | Normal | |
| MTR | rs1805087 | Normal | |
| COMT | rs4680 | Normal | |
| | rs4633 | Normal | |
| NOS3 | rs1799983 | Normal | |

## Blood Marker Summary

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous (03/05/2022) |
|---|---|---|---|---|---|---|---|
| Homocysteine (µmol/L) | | 12 | | ≤9 | 10~14 | ≥15 | 14 |
| Vitamin B12 Serum (pg/mL) | | | <150 | 232~1245 | | ≤231<br>≥1246 | <150 |
| Folate Serum (ng/mL) | 14.6 | | | ≥4.6 | | ≤4.5 | 12.8 |



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| METHYLATION | DEMO | FEMALE | 2011-01-01 | 2204050012 | 04-04-2022 09:33 |

## Methylation Complete Report

### MTHFR (677C>T)

The MTHFR gene encodes for the methylenetetrahydrofolate reductase enzyme that converts folate (vitamin B9) into its active form, 5-methyltetrahydrofolate. Mutation affecting MTHFR activity impairs folate metabolism. Individuals with CT genotype, TT genotype, and T allele increase the risk for folate therapy failure for hyperhomocysteinemia. Association of MTHFR rs1801133 variant with MTHFR rs1801131 variant increased the risk of folate treatment failure.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1801133 | C/C | Normal |

### MTHFR(1298A>C)

The MTHFR gene encodes for the methylenetetrahydrofolate reductase enzyme that converts folate (vitamin B9) into its active form, 5-methyltetrahydrofolate. Mutation affecting MTHFR activity impairs folate metabolism.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1801131 | A/C | Elevated |

rs1801131:
The MTHFR gene encodes for the methylenetetrahydrofolate reductase enzyme that converts folate (vitamin B9) into its active form, 5-methyltetrahydrofolate. Mutation affecting MTHFR activity impairs folate metabolism.
Individuals with heterozygous (partially normal) genotype may have normal or impaired folate metabolism.
Susceptible individuals may benefit from consuming methylated folate supplements.

### MTRR

The MTRR gene encodes the enzyme methionine synthase reductase (MTRR) that activates the cobalamin-dependent enzyme methionine synthase (MTR). Methionine synthase catalyzes the methylation of homocysteine to regenerate methionine. MTRR maintains MTR activity by reducing oxidized cobalamin as a cofactor for MTR. S-adenosylmethionine (SAMe) is required as a methyl donor for enzyme activity. Mutation disrupts the homocysteine cycle and results in the accumulation of homocysteine.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1801394 | A/A | Normal |



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## MAT1A

The methionine adenosyltransferase 1A (MAT1A) gene encodes for the methionine adenosyltransferase enzyme which degrades methionine. The enzyme starts a reaction that convers methionine to s-adenosylmethionine (SAM-e). SAMe is involved in transmethylation which is important to many cellular processes, including DNA transcription and translation, regulating reactions involving proteins and lipids, and neurotransmitter signaling. Mutations in the MAT1A gene lead to a buildup of methionine and decreased SAM-e production. This may lead to elevated homocysteine levels and increased cardiovascular disease risk. This relationship may be modulated by vitamins B6 and folate. Methylation activity impairment, independent of homocysteine levels, may be implicated in cardiovascular disease risk perhaps due to the role of methylation in regulation of polyunsatturated fatty acids.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs3851059 | G/G | Normal |

## SHMT1

The SHMT1 gene encodes production of the enzyme serine hydroxymethyltransferase. This pyridoxal phosphate (vitamin B6)-dependent enzyme catalyzes the reversible and bidirectional conversion of serine and tetrahydrofolate to glycine and 5, 10-methylene tetrahydrofolate (5,10-MTHF). Serine is required as a methyl donor for this reaction. This enzymatic reaction provides one carbon units for nucleotide synthesis and is crucial in the folate methylation cycle. Mutations in the SHMT1 gene downregulate enzyme activity in the folate cycle, leading to decreased 5-methyltetrahydrofolate (5-MTHF) levels and increased homocysteine, and are linked to altered DNA synthesis, oncogene overexpression, and tumor suppressor gene inactivation.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1979277 | C/C | Normal |

## GNMT

The glycine N-methyltransferase gene (GNMT) regulates the production of the ezyme glycine N-methyltransferase which is involved in the conversion of glycine and S-adenosylmethionine (SAMe) to N-methylglycine and S-adenosylhomocysteine (SAH). Mutation in the GNMT gene impairs the breakdown of methionine and SAMe, causing it to build up in the blood, abnormal methylation of DNA, and cytotoxicity and impaired DNA formation. Additionally, GNMT regulates genes involved in detoxification and antioxidant pathways, decreasing the ability to eradicate free radicals and xenobiotic compounds.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs10948059 | C/C | Normal |



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## BHMT

This gene encodes the betaine-homocysteine S-methyltransferase (BHMT) enzyme that catalyzes the conversion of betaine and ho dimethylglycine and methionine respectively, using betaine as a methyl donor. BHMT uses zinc as a cofactor in the transfer of a betaine to homocysteine. In the methylation cycle choline is oxidized to form betaine, and choline and betaine form a backup pa favored in folate deficiency. Because the BHMT pathway is "salvage pathway" to remethylate homocysteine back to methionine, m gene can lead to hyperhomocysteinemia.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs3733890 | A/A | Normal |

## MTRR

The MTRR gene encodes the enzyme methionine synthase reductase (MTRR) that activates the cobalamin-dependent enzyme meth synthase (MTR). Methionine synthase catalyzes the methylation of homocysteine to regenerate methionine. MTRR maintains MTR reducing oxidized cobalamin as a cofactor for MTR. S-adenosylmethionine (SAMe) is required as a methyl donor for enzyme activi disrupts the homocysteine cycle and results in the accumulation of homocysteine.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs162036 | A/A | Normal |

## MTR

The MTR gene encodes an enzyme called methionine synthase (MTR) which is responsible for the remethylation and conversion o back to methionine ("homocysteine recycling"). This enzyme requires 5-methyltetrayhydrofolate (5-MTHF) as a methyl donor and B12 (methylcobalamin) to catalyze the conversion. Mutation upregulates the enzyme activity (increasing "homocysteine recycling decreased plasma homocysteine concentration and affects vitamin B12 levels in the body. It may demand an increased use of fol methyl groups for the remethylation of homocysteine to methionine.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1805087 | A/A | Normal |

# Methylation Panel

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## COMT

The COMT gene encodes the catechol-O-methyltransferase enzyme which breaks down the neurotransmitter dopamine. Mutation causes lower enzymatic activity resulting in increased brain dopamine levels. This might lead to impaired signal transmission within the nerve cells and the brain resulting in development of nervous system disorders.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs4680 | G/G | Normal |
| rs4633 | C/C | Normal |

## NOS3

The NOS3 (eNOS) gene encodes the enzyme endothelial nitric oxide synthase that regulates the production and signaling of of nitric oxide (NO) in the vascular endothelial cells lining the inner surface of blood vessels. NO plays crucial roles in regulating vascular tone, blood pressure, and blood clotting. DNA methylation plays an important role in eNOS regulation. Mutations in the eNOS gene are assosicated with increased risk of coronary artery disease, hypertension, angina, and pre-eclampsia.

| SNP ID | RESULT | RISK |
|---|---|---|
| rs1799983 | G/G | Normal |

# Methylation Panel

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## Serum Markers Summary

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous (03/05/2022) |
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| Vitamin B12 Serum (pg/mL) | | | <150 | 232~1245 | | ≤231<br>≥1246 | <150 |
| Folate Serum (ng/mL) | 14.6 | | | ≥4.6 | | ≤4.5 | 12.8 |

## Notes

### Homocysteine

Homocysteine (Hcy) is a naturally occurring amino acid produced during the methylation process. The concentrations of Hcy are maintained by two routes; particularly, the remethylation pathway, where Hcy is converted back to methionine, and the transsulfuration pathway, where Hcy is converted to cystathionine to form cysteine. Thus, altered gene activity in any of the given pathways can affect these processes resulting in altered levels of Hcy in blood. Elevated plasma Hcy is a risk factor for cardiovascular disease and Alzheimer's disease. Additionally, the reactions that remove Hcy are very sensitive to B vitamin status, including B12, B6 and folate, as these vitamins are required for the breakdown of Hcy. As a result, elevated Hcy levels can also be indicative of a deficiency in the above-mentioned nutrients.
Source: https://doi.org/10.1016/j.ymgme.2014.10.006
https://pubmed.ncbi.nlm.nih.gov/15218538/

### Vitamin B12 Serum

The nutrient, vitamin B12 is required for the action of methionine synthase in the remethylation process. In this process, methionine synthase converts homocysteine to methionine. A vitamin B12 deficiency can lead to the blocking of the methylation pathway which may cause the folate cofactors in the cell to become trapped as 5-methyltetrahydrofolate (a form of folate). This process in turn produces a pseudo folate deficiency in cells, which could prevent cell division and give rise to anaemia, identical to that seen in folate deficiency.
Source: https://doi.org/10.1002/jimd.12009
https://doi.org/10.1017/s0029665199000580

### Folate Serum

In the methylation pathway, the nutrient, folate, as N5-methyltetrahydrofolate, supplies a methyl group to convert homocysteine to methionine, which is then converted to the universal methyl donor, S-adenosylmethionine. Although nutrients other than folate supply or transport methyl groups (methionine, choline, and vitamin B-12), only folate is capable of de novo generation of one- carbon groups. As a result, folate is very crucial in the methylation pathway. Thus, a folate deficiency can detrimentally affect the methylation pathway which can give rise to various clinical conditions.
Source: https://doi.org/10.1093/ajcn/72.4.903
https://doi.org/10.2217/epi-2016-0003

practitioner for diagnosis and treatment considerations.



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