Vitamin B2
Helps recycle folate into a usable methyl-donor form; Precursor to FAD (flavin adenine dinucleotide) which assists methylation reactions.1,2,3

Vitamin B3
Maintains proper methylation of genes that suppress tumor formation and growth.3,4,5,6

Vitamin B6
Cofactor for the enzyme (serine hydroxyl methyl transferase) that transfers methyl units.7,8

Vitamin B12
B12 is a key enzyme needed in the synthesis of S-adenosylmethionine (SAMe), the body’s most important methyl donor. Methionine synthase, an enzyme that catalyzes the methylation cycle is B12 dependent.9,10,11

Folate
Methyl donor for many reactions in the body, including neurotransmitter synthesis and conversion of homocysteine to methionine; Precursor to SAMe; Required for proper DNA synthesis.12,13,14

Selenium
Inhibits a methylating enzyme (DNA methyltransferase) in cancer genes, effectively turning them off; Selenoproteins protect DNA and metabolize methionine.35,36

Zinc
Deficiency can lower the ability to use methyl groups from methyl donors such as SAMe, thus causing global hypo-methylation of DNA.37,38,39

Magnesium
Its role in the methylation of genes that affect glucose metabolism may explain the link between magnesium deficiency and diabetes.28,29

Choline
A major source of methyl groups (methyl donor); Deficiency linked to DNA damage.15,16,17

Serine
Important methyl donor, especially in the case of folate deficiency.18,19,20

Glutathione
Deficiency impairs methylation reactions and hinders synthesis of the methyl donor SAMe.21,22

Vitamin C
Deficiency alters methylation patterns in cancer cells; Also a cofactor for methylating enzymes.23,24

Vitamin B12
B12 is a key enzyme needed in the synthesis of S-adenosylmethionine (SAMe), the body’s most important methyl donor. Methionine synthase, an enzyme that catalyzes the methylation cycle is B12 dependent.9,10,11

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