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

**Vitamin B3**
Maintains proper methylation of genes that suppress tumor formation and growth.

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

**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.

**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.

**Choline**
A major source of methyl groups (methyl donor); Deficiency linked to DNA damage.

**Serine**
Important methyl donor, especially in the case of folate deficiency.

**Glutathione**
Deficiency impairs methylation reactions and hinders synthesis of the methyl donor SAMe.

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

**Vitamin B1**

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

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

**Copper**
Several key enzymes needed for methylation reactions are copper dependent.

**Zinc**
Use methyl groups from methyl donors such as SAMe, thus causing global hypo-methylation of DNA.

**Methylation**

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REFERENCES


