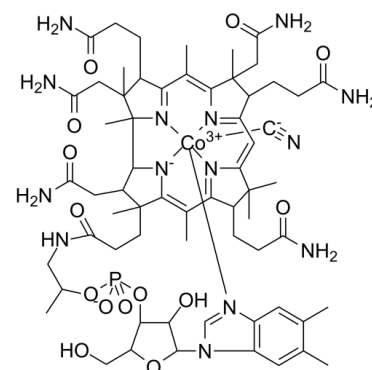


Data Sheet

Product Name:	Vitamin B12
Cat. No.:	CS-2354
CAS No.:	68-19-9
Molecular Formula:	C ₆₃ H ₈₈ CoN ₁₄ O ₁₄ P
Molecular Weight:	1355.37
Target:	Endogenous Metabolite
Pathway:	Metabolic Enzyme/Protease
Solubility:	DMSO : 25 mg/mL (18.45 mM; Need ultrasonic); H ₂ O : 12 mg/mL (8.85 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

Vitamin B12 is a water soluble vitamin with a key role in the normal functioning of the brain and nervous system, and for the formation of blood^{[1][2]}. **In Vitro:** Vitamin B12 is one of the eight B vitamins. It is normally involved in the metabolism of every cell of the human body, especially affecting DNA synthesis and regulation, but also fatty acid synthesis (especially odd chain fatty acids) and energy production. However, many (though not all) of the effects of functions of B12 can be replaced by sufficient quantities of folic acid (vitamin B9), since B12 is used to regenerate folate in the body. Most vitamin B12 deficiency symptoms are actually folate deficiency symptoms, since they include all the effects of pernicious anemia and megaloblastosis, which are due to poor synthesis of DNA when the body does not have a proper supply of folic acid for the production of thymine due to methyl trapping. When sufficient folic acid is available, all known B12 related deficiency syndromes normalize, save those narrowly connected with the vitamin B12-dependent enzymes Methylmalonyl Coenzyme A mutase, and 5-methyltetrahydrofolate-homocysteine methyltransferase (MTR), also known as methionine synthase; and the buildup of their respective substrates (methylmalonic acid, MMA) and homocysteine. Coenzyme B12's reactive C-Co bond participates in three main types of enzyme-catalyzed reactions^{[1][2]}.

References:

[1]. http://en.wikipedia.org/wiki/Vitamin_B12

[2]. Banerjee, R. and S.W. Ragsdale, The many faces of vitamin B12: catalysis by cobalamin-dependent enzymes. *Annu Rev Biochem*, 2003. 72: p. 209-47.

CAIndexNames:

Vitamin B12

SMILES:

N#[C-][Co+3]123([N]4=CN(C(OC(CO)C5OP6([O-])=O)C5O)C7=C4C=C(C)C(C)=C7)[N]8=C9C(CCC(N)=O)C(CC(N)=O)(C)C8(C)C(C(C(N)=O)C%10(CCC(NCC(C)O6)=O)C)[N-]1C%10=C(C)C(C(CCC(N)=O)C%11(C)C)=[N]2C%11=CC%12=[N]3C(C(C(C(N)=O)(C)C%12CCC(N)=O)=C9C

Caution: Product has not been fully validated for medical applications. For research use only.

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