

# Chemical Variants of Vitamin B<sub>12</sub> in Photosynthetic Microbes

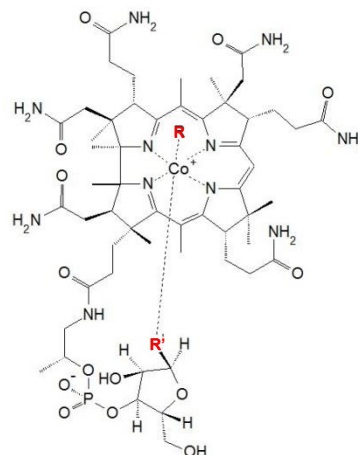
## Application #AN4620

### Conditions

Column: ACE 5 AQ  
Dimensions: 150 x 2.1 mm  
Part Number: ACE-126-1502  
Mobile Phase: A: 0.1% formic acid in H<sub>2</sub>O  
B: MeOH

Time (mins)	%B
0	5
25	70
30	5

Flow Rate: 0.2 mL/min  
Temperature: 30 °C  
Detection: Bruker micrOTOF-QII MS  
ESI in positive ion mode

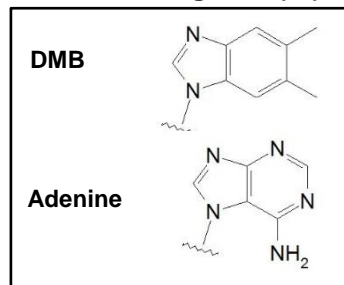


Prokaryotic cyanobacteria and eukaryotic algae use different chemical variants of vitamin B<sub>12</sub>. Cyanobacteria synthesise pseudocobalamin. Microalgae synthesise cobalamin.

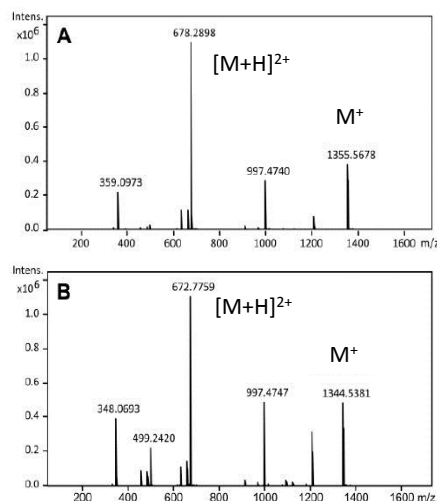
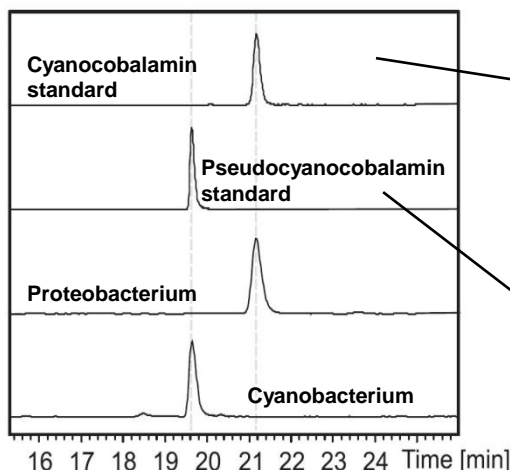
### Upper-axial ligands (R)

	with DMB	with Adenine
R=CN	cyanocobalamin (vitamin B <sub>12</sub> )	cyanopseudocobalamin (pseudovitamin B <sub>12</sub> )
R=Ado	adenosylcobalamin (coenzyme B <sub>12</sub> )	adenosylpseudocobalamin (pseudocoenzyme B <sub>12</sub> )
R=CH <sub>3</sub>	methylcobalamin	methylpseudocobalamin
R=OH	hydroxycobalamin	hydroxypseudocobalamin

### Lower-axial ligands (R')



Extracted ion chromatograms for *m/z* 1355.5 (cyanocobalamin) and *m/z* 1344.5 (cyanopseudocobalamin)



Helliwell KE, Lawrence AD, Holzer A, Kudahl UJ, Sasso S, Krautler B, Scanlan DJ, Warren MJ, Smith AG (2016) Cyanobacteria and eukaryotic algae use different chemical variants of vitamin B12. *Current Biology* 26, 999-1008. doi:10/1016/j.cub.2016.02.041

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