

Fig. S1. Effect of [BMIM][BF₄] and [HMIM][BF₄] on vitamin B₁₂ and propionic acid biosynthesis by *P. freudenreichii*. Data are mean values \pm standard deviation of three replicates. Vertical bars on the columns are \pm SD of the mean.

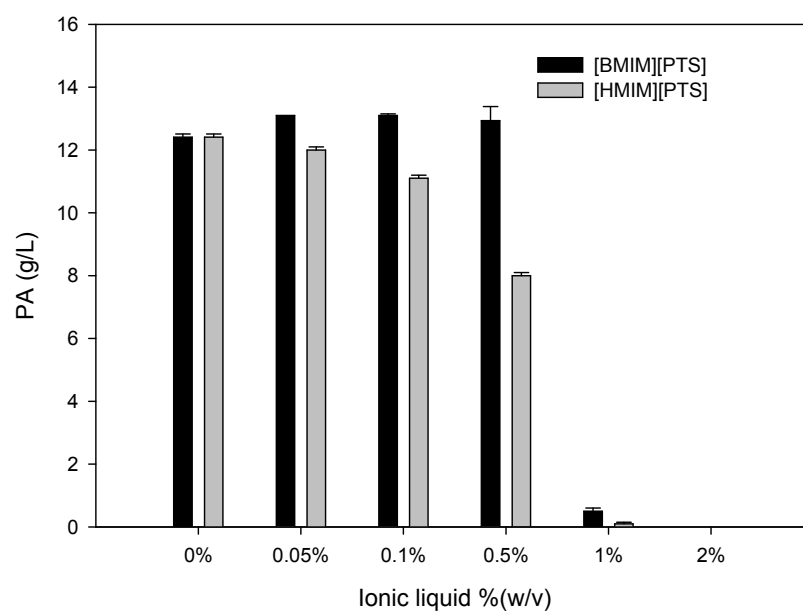
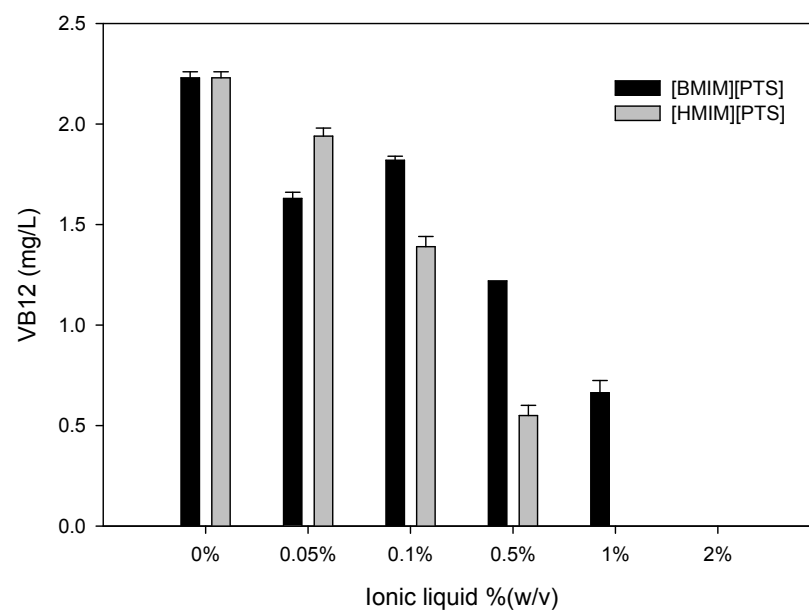


Fig. S2. Effect of [BMIM][BTS] and [HMIM][PTS] on vitamin B₁₂ and propionic acid biosynthesis by *P. freudenreichii*. Data are mean values ± standard deviation of three replicates. Vertical bars on the columns are ±SD of the mean.

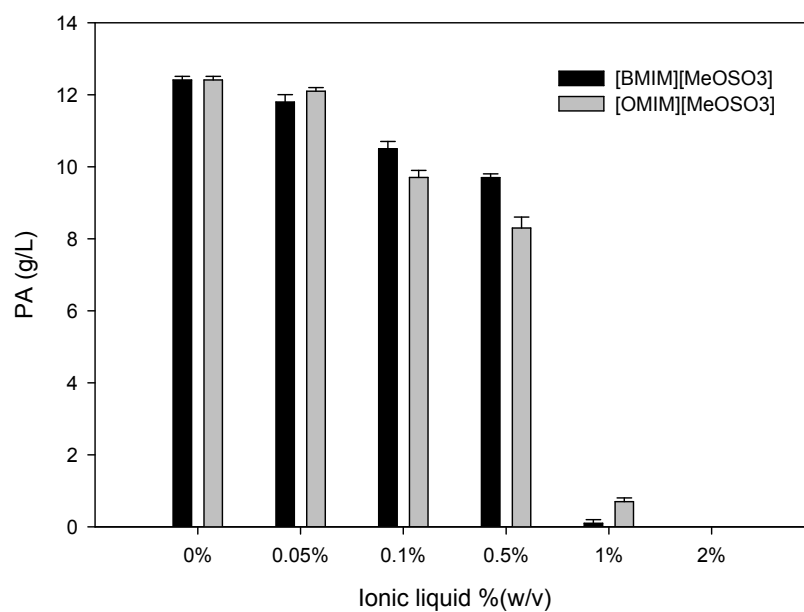
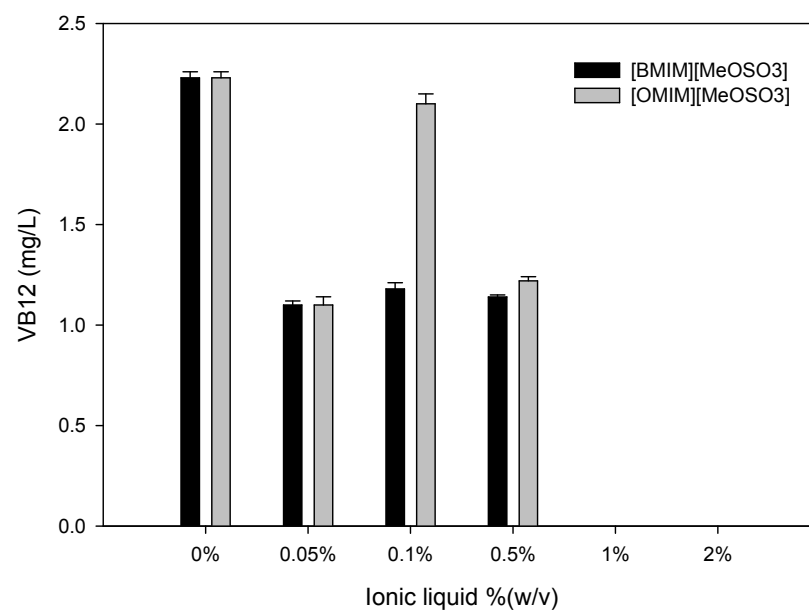


Fig. S3. Effect of [BMIM][MeOSO₃] and [OMIM][MeOSO₃] on vitamin B₁₂ and propionic acid biosynthesis by *P. freudenreichii*. Data are mean values \pm standard deviation of three replicates. Vertical bars on the columns are \pm SD of the mean.

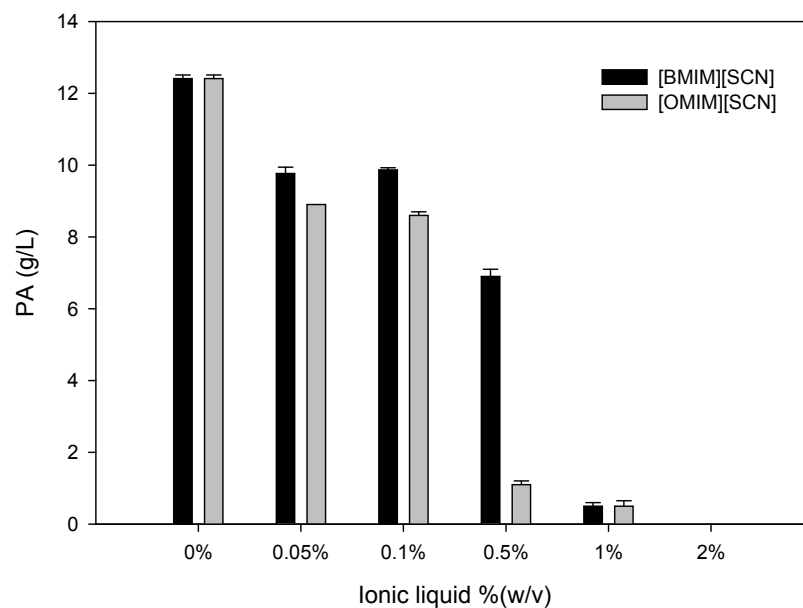
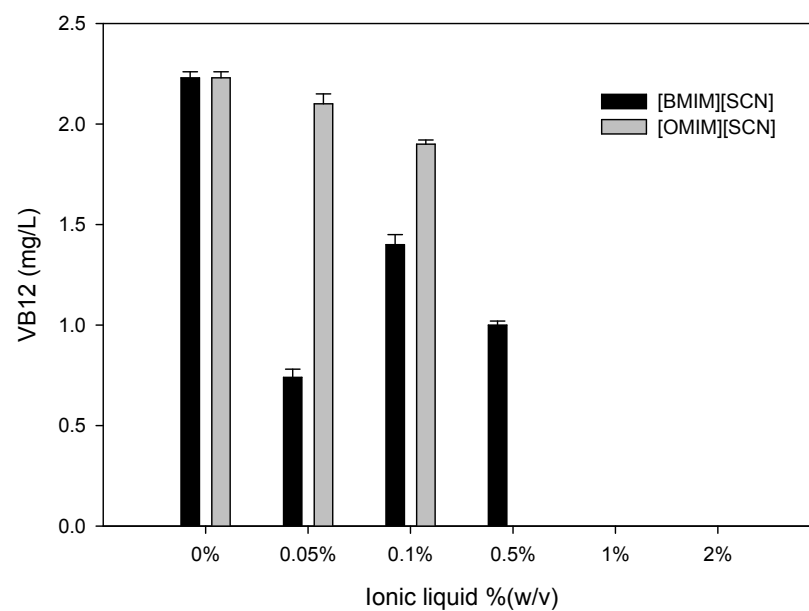


Fig. S4. Effect of [BMIM][SCN] and [OMIM][SCN] on vitamin B₁₂ and propionic acid biosynthesis by *P. freudenreichii*. Data are mean values \pm standard deviation of three replicates. Vertical bars on the columns are \pm SD of the mean.

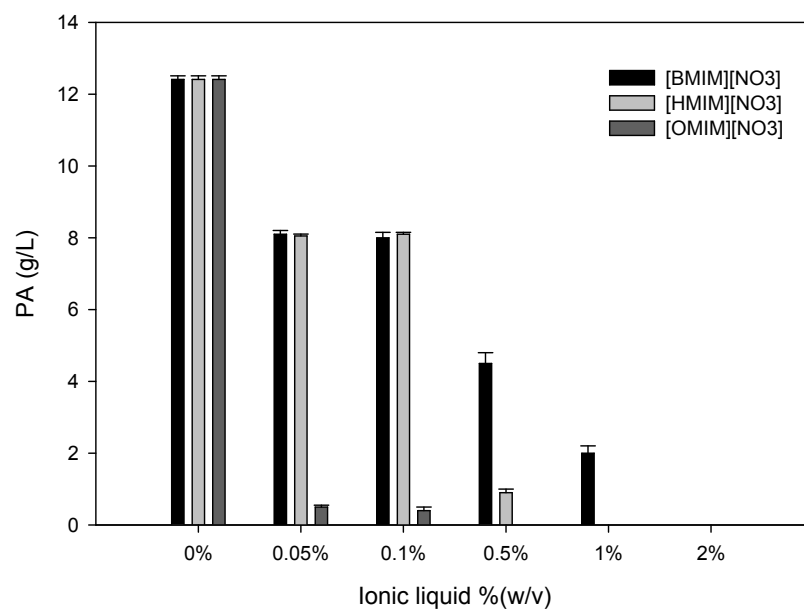
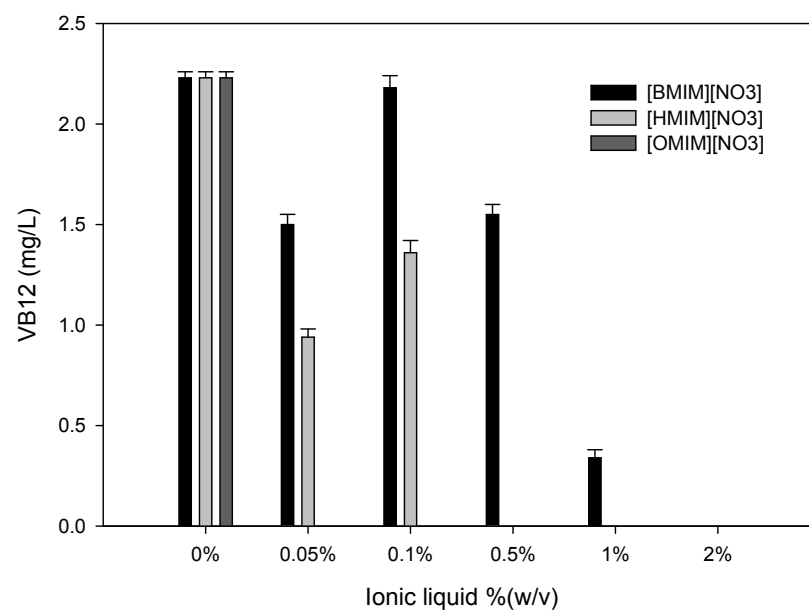


Fig. S5. Effect of [BMIM][NO₃], [HMIM][NO₃] and [OMIM][NO₃] on vitamin B₁₂ and propionic acid biosynthesis by *P. freudenreichii*. Data are mean values \pm standard deviation of three replicates. Vertical bars on the columns are \pm SD of the mean.

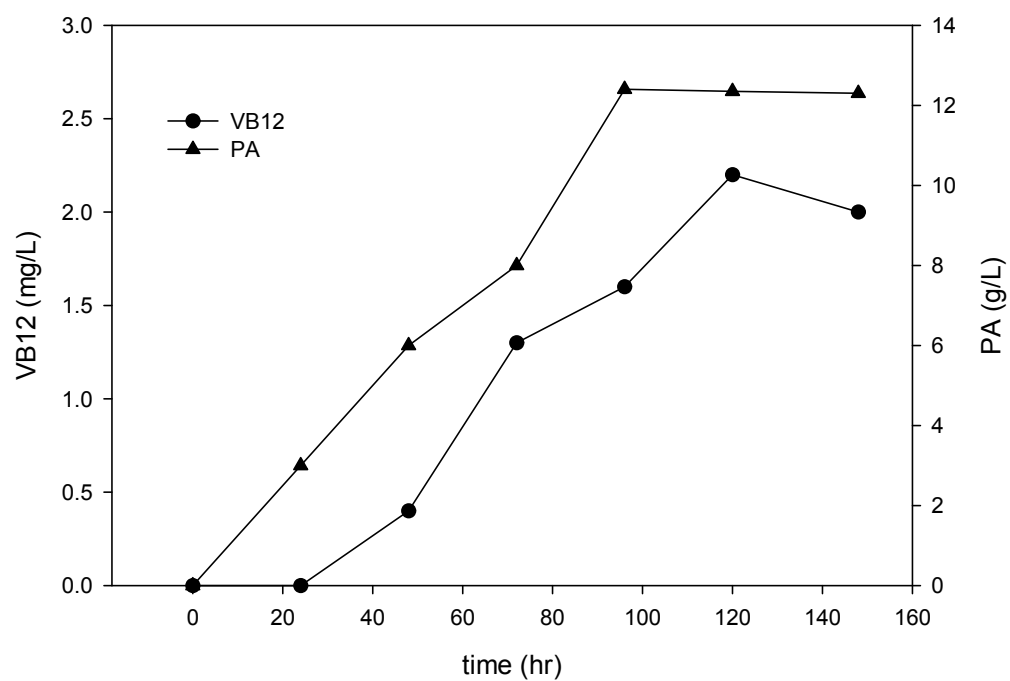


Fig. S6. The amount of VB12 and PA production over time by *P. freudenreichii*. Maximum production of VB12 is at 120 hr.