

1 **Supplementary Information**

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3 **Vitamin B12 inhibits α -synuclein fibrillogenesis and protects**
4 **against amyloid-induced cytotoxicity**

5 **Longgang Jia, Ying Wang, Wei Wei, Wenping Zhao, Fuping Lu*,**
6 **Fufeng Liu***

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8 State Key Laboratory of Food Nutrition and Safety, Tianjin, 300457, P. R. China; Key
9 Laboratory of Industrial Fermentation Microbiology, Ministry of Education, Tianjin,
10 300457, P. R. China; Tianjin Key Laboratory of Industrial Microbiology, Tianjin,
11 300457, P. R. China; College of Biotechnology, Tianjin University of Science &
12 Technology, Tianjin 300457, P. R. China

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14 **Corresponding Authors**

15 *Fufeng Liu, Phone: +86-022-60602717; Fax: +86-022-60602298; E-mail:
16 fufengliu@tust.edu.cn

17 *Fuping Lu, Phone: +86-22-60602271; Fax: +86-22-60602298; E-mail:
18 lfp@tust.edu.cn

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20 Table S1 Raw data of the ThT fluorescence assay of α SN.

Time (h)	Parallel 1	Parallel 2	Parallel 3	Mean
0	41.42	43.35	40.65	41.81
12	196.51	236.96	220.99	218.15
24	530.76	597.22	579.08	569.02
48	1215.64	1418.88	1359.44	1331.32
72	1676.08	1820.57	1782.22	1759.62
96	1790.70	1985.28	1913.27	1896.421
120	2023.81	2152.89	2111.26	2095.99
144	2029.59	2397.56	2276.27	2234.47
168	2071.01	2218.39	2130.89	2140.10
192	2052.71	2253.07	2173.62	2159.80

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22 Table S2 Raw data of the ThT fluorescence assay of α SN:VB12 at 1:0.5 ratio.

Time (h)	Parallel 1	Parallel 2	Parallel 3	Mean
0	41.42	35.64	38.97	38.67
12	42.38	46.24	45.55	44.72
24	288.02	294.76	269.49	284.09
48	852.49	897.76	897.77	882.67
72	984.45	1272.47	1201.32	1152.75
96	1425.63	1592.27	1540.76	1519.55
120	1494.02	1656.81	1523.65	1558.16
144	1582.64	1754.10	1633.97	1656.90
168	1560.48	1723.28	1652.85	1645.54
192	1576.86	1762.77	1719.72	1686.45

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24 Table S3 Raw data of the ThT fluorescence assay of α SN:VB12 at 1:1 ratio.

Time (h)	Parallel 1	Parallel 2	Parallel 3	Mean
0	41.42	39.49	35.80	38.91
12	45.27	39.49	38.97	41.24
24	46.24	40.46	45.65	44.12
48	85.73	76.10	66.92	76.25
72	388.19	355.44	346.15	363.26
96	603.97	636.72	532.46	591.05
120	1183.85	1283.06	1204.21	1223.71
144	1183.85	1283.06	1246.00	1237.64
168	1164.58	1289.816	1267.99	1240.80
192	1186.74	1359.16	1327.53	1291.14

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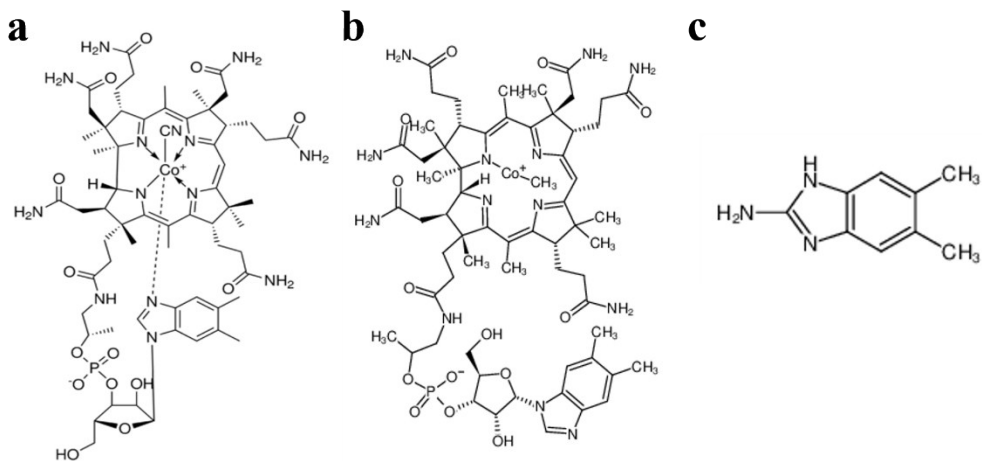
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30 Table S4 Raw data of the ThT fluorescence assay of α SN:VB12 at 1:2 ratio.

Time (h)	Parallel 1	Parallel 2	Parallel 3	Mean
0	40.46	35.64	38.24	38.11
12	43.35	38.53	44.93	42.27
24	47.20	37.57	40.63	41.80
48	52.98	57.80	52.67	54.48
72	156.05	192.65	186.05	178.25
96	424.80	450.81	408.22	427.94
120	587.59	674.28	577.85	613.24
144	500.90	600.11	578.54	559.85
168	567.36	646.35	580.24	597.98
192	580.85	655.02	578.08	604.65

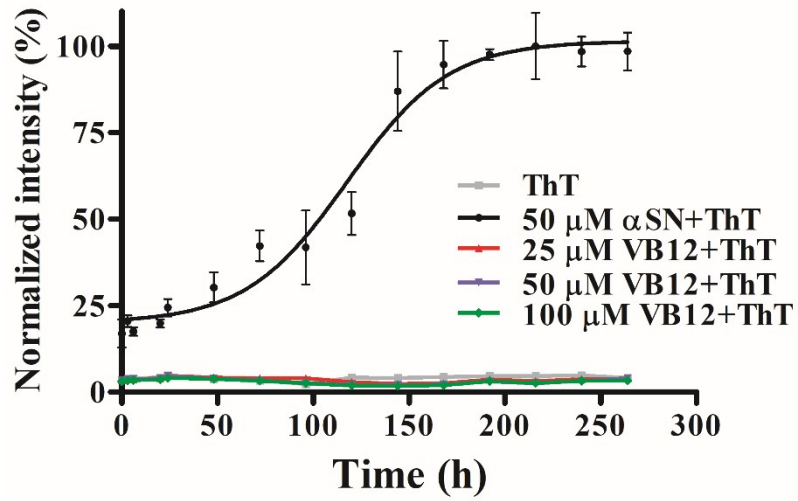
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33 **Figure S1.** Chemical structure of cyanocobalamin (a), methylcobalamin (b) and
 34 dimethyl benzimidazole (c).

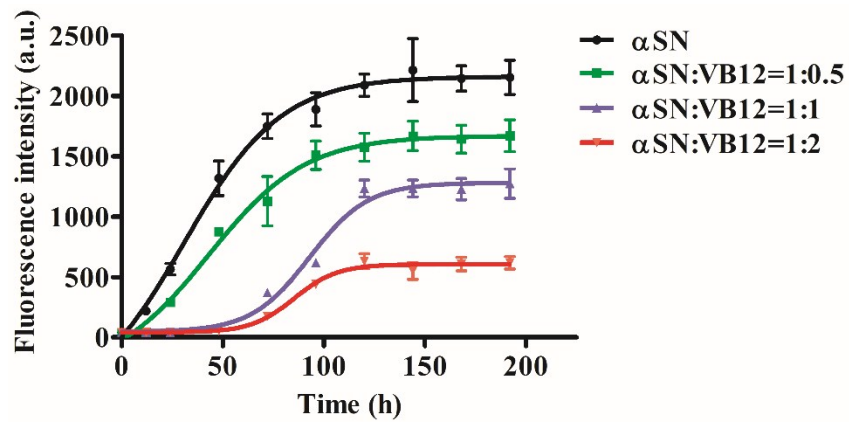
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37 **Figure S2.** The influence of VB12 on the ThT fluorescence. The ThT signal was
 38 measured at the excitation wavelength of 440 nm, the emission wavelength of 485 nm.
 39 ThT without VB12 and αSN was set as negative control, and ThT with 50 μM αSN was
 40 set as positive control.

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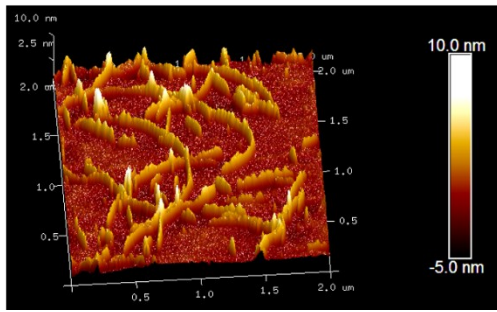


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43 **Figure S3.** Raw data of ThT fluorescence assays.

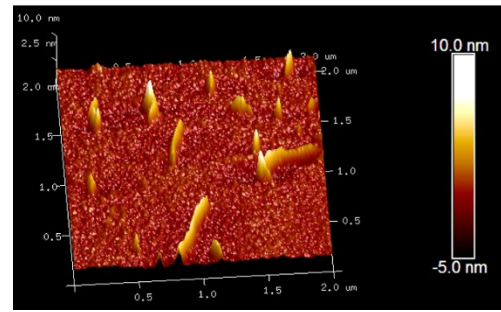
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a



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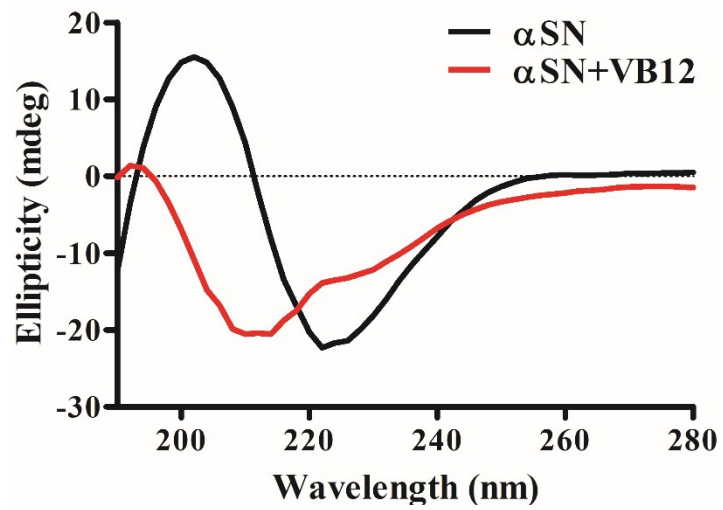
b



46 **Figure S4.** 3D AFM images of recombinant α SN aggregates after incubation without

47 (a) and with (b) VB12 at molar ratio of 1:2.

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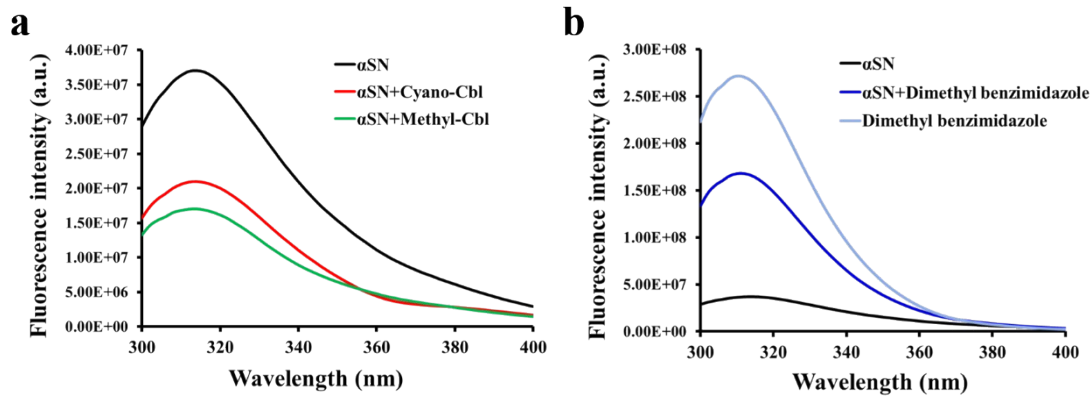


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50 **Figure S5.** The raw data of far-UV CD spectra of α SN in the absence or presence of

51 VB12 at molar ratio of 1:1.

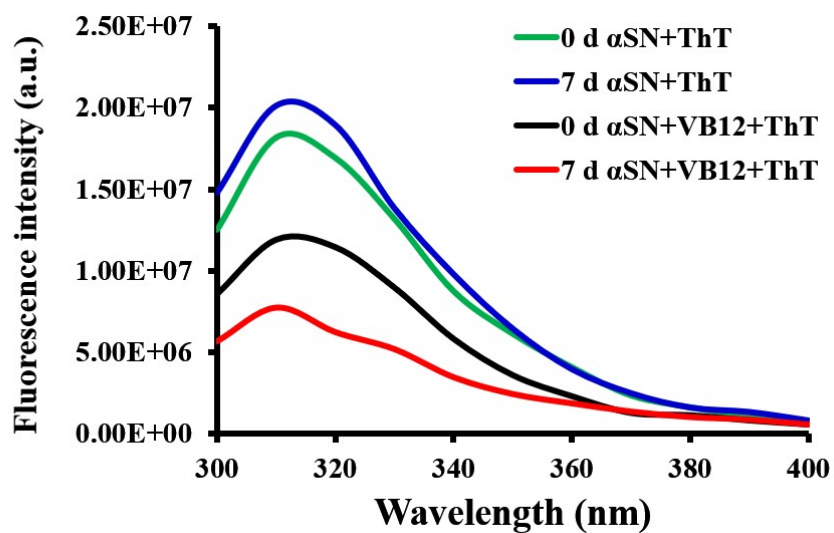
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54 **Figure S6.** Fluorescence spectrum of 50 μ M α SN in presence of isoconcentrations of
 55 compounds that associated with the structure of VB12 at exciting wavelength of 275
 56 nm, scan region was 300-400 nm. (a) Cyanocobalamin (Cyano-Cbl) and
 57 methylcobalamin (Methyl-Cbl). (b) Dimethyl benzimidazole.

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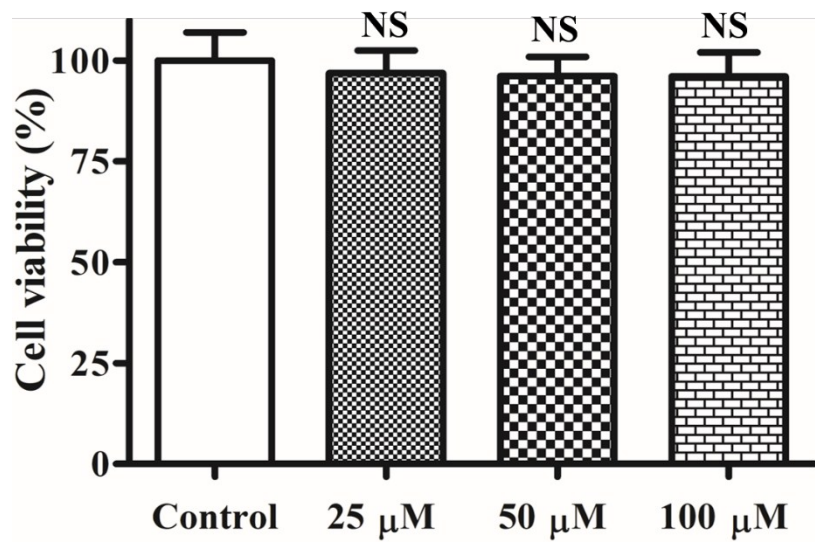
60 **Figure S7.** Fluorescence spectrum of α SN with ThT in presence or absence of VB12

61 that incubated at 37 °C for 0 d or 7 days. Exciting wavelength was 275 nm, scan region

62 was 300-400 nm.

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66 **Figure S8.** Cytotoxicity of VB12 to the PC12 cells. The values represent means \pm SD

67 (n=6). NS, not significant.

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