Supplementary Information

Effects of the toxic metals arsenite and cadmium on α-synuclein aggregation *in vitro* and in cells

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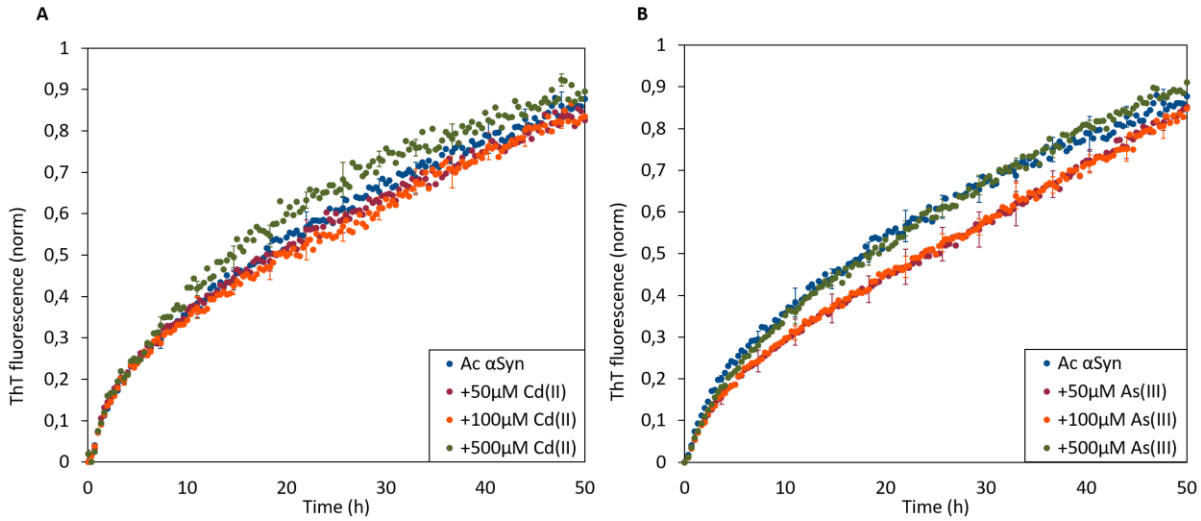

Figure S1 - ThT fluorescence kinetic traces for 50μM Ac αSyn aggregation (pH 7.4) in the presence of 10% amyloid fibre seeds. The effect of the metals is no longer visible.

Table S1 – Reported values for αSyn amyloid fibril pitch based on AFM and cryo-EM measurements.

Reference	**Protein**	**Method**	**Pitch**
Li Y. et al., 2018 [1]	WT αSyn	CryoEM	119 nm
R. Guerrero-Ferreira et al., 2019 [2]	WT αSyn	CryoEM	108 nm
Li B. et al., 2018 [3]	WT αSyn	CryoEM	rod: 92 nm twister: 46 nm
Ni X. et al., 2019 [4]	Ac αSyn	CryoEM	121 nm
Ni X. et al., 2019 [4]	Ac αSyn1-122	CryoEM	85 nm
Ni X. et al., 2019 [4]	Ac αSyn1-103	CryoEM	65 nm
Zhao K. et al., 2020 [5]	Ac αSyn	AFM	120 nm
Zhao K. et al., 2020 [5]	Ac αSyn E46K	AFM/CryoEM	64 nm
Iyer A. et al., 2016 [6]	Ac αSyn	AFM	115 nm
Boyer D. et al., 2019 [7]	α Syn H50Q	CryoEM	90 nm
Sun Y. et al., 2020 [8]	Ac αSyn A53T	CryoEM	97 nm

Table S2 - Measured values of As(III) and Cd(II) concentrations in ppb, measured using ICP-MS. Samples (1 to 1 protein to metal) were spun down (to get amyloids at the bottom) after no incubation and after 5 days of aggregation, followed by metal analysis of the supernatant. The 'missing' metal from the solution (comparing 0 to 5 days) must have been incorporated into the amyloids.

As^{3+}	**Conc. (µM)**	**Cd^{2+}**	**Conc. (µM)**
AVG As(III)0 h	50	AVG Cd(II) 0 h	50
AVG As(III) 5 days	20	AVG Cd(II) 5 days	24
Left in solution (%):	40%		49%

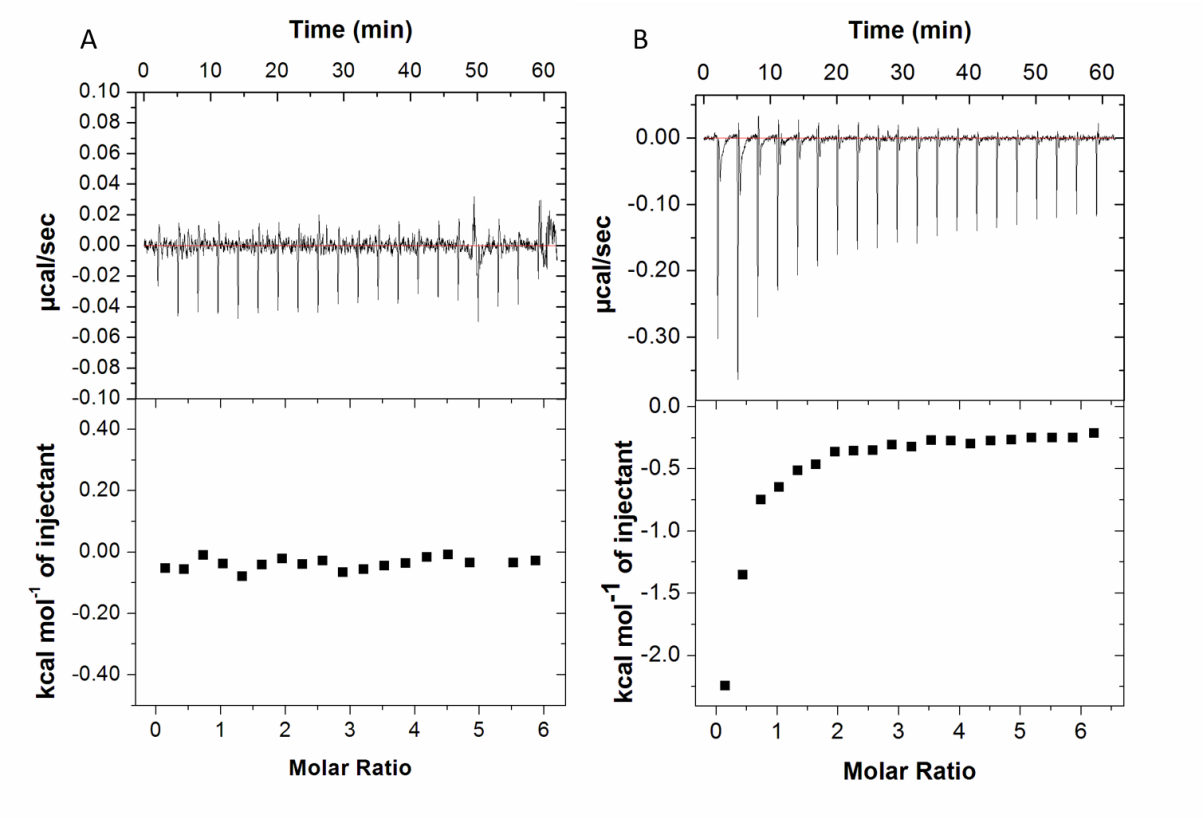

Figure S2 - ITC data of 50µM monomeric Ac αSyn with addition of A) arsenite ($NaAsO_2$) and B) cadmium ($CdCl_2$) at a final ratio of 1:6 monomers to metal ions. There's no quick binding to be detected for As(III). There is a significant heat exchange with the addition of Cd(II) that may suggest a weak binding to Ac αSyn assembled species.

References

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