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## **Supporting Information**

## Tantalum(V) peroxido complexes as phosphatase inhibitors: a comparative study vis-a-vis peroxidovanadates

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Temperature range (°C)	Observed weight loss (%)	Final residue(%)
40-90	8.0	
93-275	10.6	54.7
329-605	26.7	
41-110	7.4	
118-276	4.5	65.4
392-691	22.6	
	40-90 93-275 329-605 41-110 118-276 392-691	Temperature range (C)Observed weight loss (%)40-908.093-27510.6329-60526.741-1107.4118-2764.5392-69122.6

Table S1 TGA data for PATa and PSSTa

 Table S2 Experimental and theoretical Infrared spectral data for PATa complex

Assignment		PATa (cm <sup>-1</sup> )
v(O-O)	Exp.	836(sh), 817(sh), 803(s)
	Calc.	911, 907, 900
$v_{\rm as}(M-O_2)$ Ex	Exp.	569(sh)
	Calc.	558
$v_{\rm s}({ m M-O_2})$	Exp.	534(s)
	Calc.	535
v <sub>as</sub> (COO) H	Exp.	1574(s)
	Calc.	1562
v <sub>s</sub> (COO)	Exp.	1409(m)
	Calc.	1386

<sup>a</sup>s, strong; m, medium; vw, very weak; sh, shoulder



Fig. S1 The<sup>13</sup>C NMR spectra of PATa in  $D_2O$ . The spectra were recorded as follows: (a) PATa in  $D_2O$  immediately after preparation, (b) solution of (a) 12 h later.



**Fig. S2** Lineweaver-Burk plots for the inhibition of ACP activity in presence or absence of (A) **DPV**, (B) **PAV** and(C) **PATa**. The inset represents the secondary plot of the initial kinetic data of the Lineweaver-Burk plot. The reaction mixture contained acetate buffer (0.1 M, pH 4.6) and p-NPP (50-300  $\mu$ M). The reaction was started by adding ACP (18.38  $\mu$ g mL<sup>-1</sup>) to the reaction solution, which was pre-incubated for 5 min and the rates of hydrolysis in the presence of  $\bullet$  0  $\mu$ M,  $\blacksquare$  2.5 $\mu$ M,  $\blacktriangle$  5  $\mu$ M, X 7.5  $\mu$ M,  $\varkappa$  10  $\mu$ M inhibitors were obtained. The values are expressed as the mean  $\pm$  SE from three separate experiments. Inset: (a) the slopes were plotted against inhibitor concentrations and K<sub>i</sub> values were obtained from the x-intercepts of these re-plots. (b) The vertical intercepts were plotted against the inhibitor concentration and K<sub>ii</sub> values were obtained from the x-intercepts of these re-plots.