

## Electronic Supplementary Information (ESI)

### **Manganese-52: applications in cell radiolabelling and liposomal nanomedicine PET imaging using oxine (8-hydroxyquinoline) as an ionophore.**

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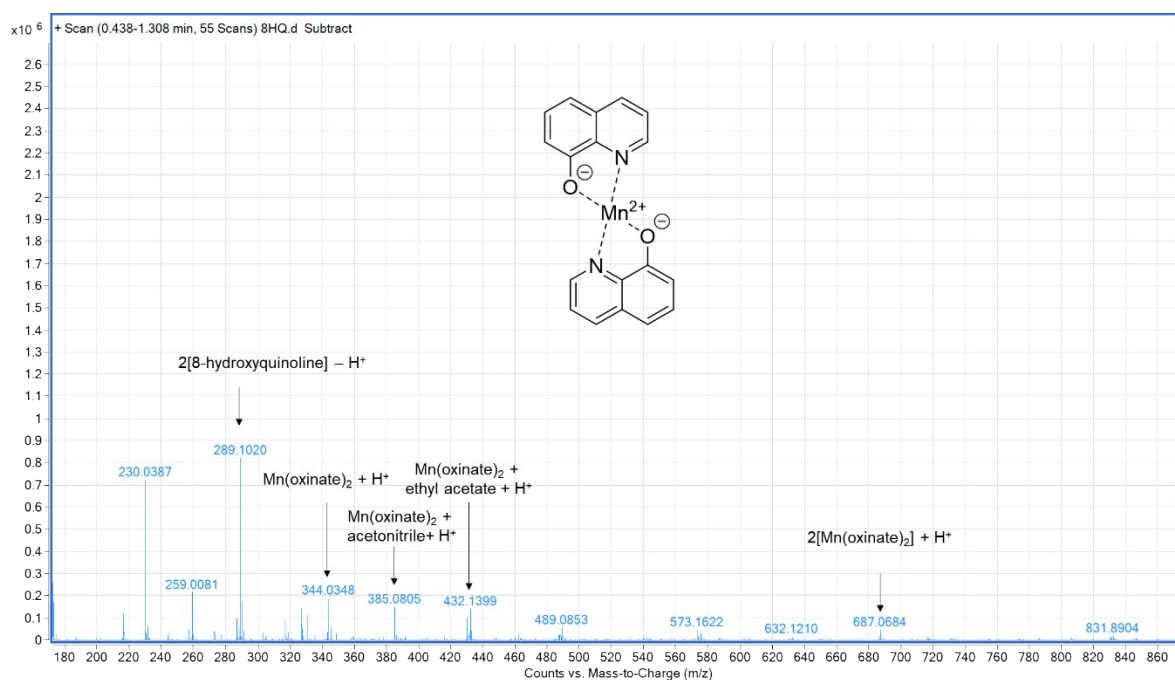
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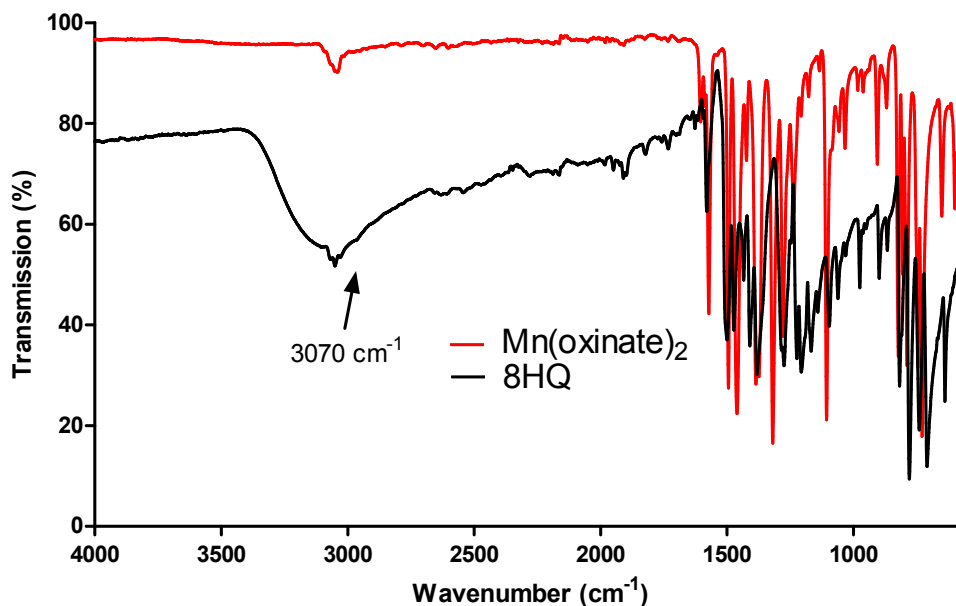
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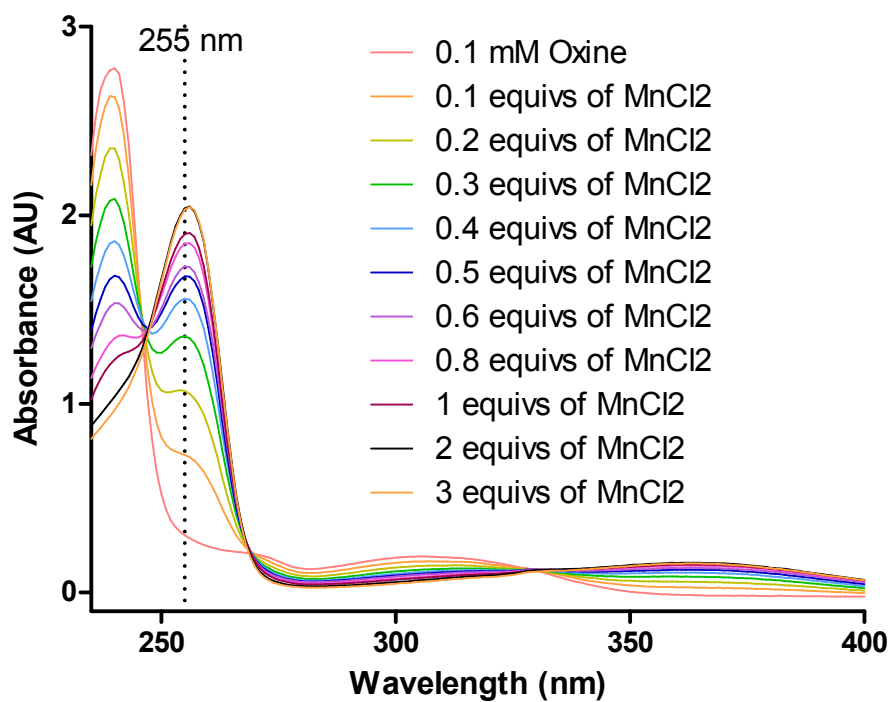
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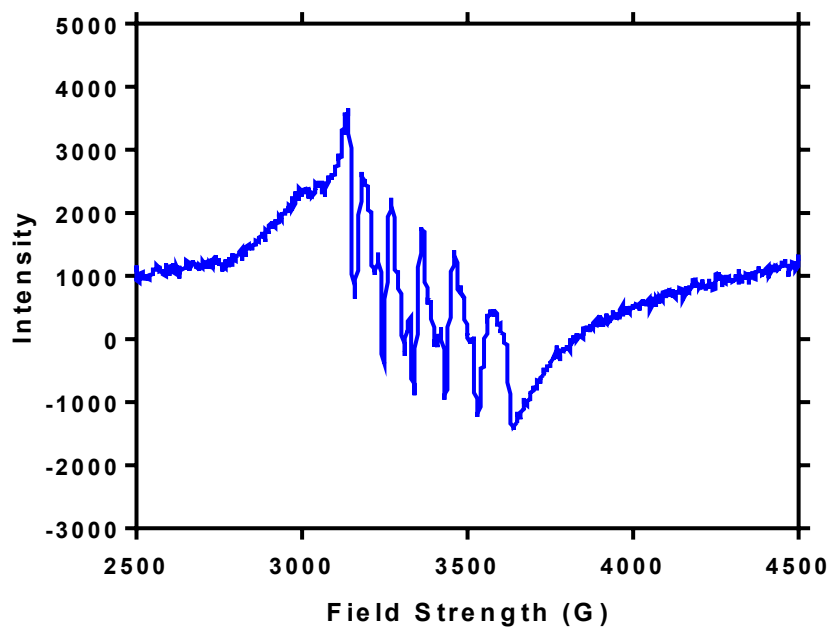
**Figure S1:** Mass spectrum (ESI, +ve mode) of  $\text{Mn(oxinate)}_2$ . Mass peak at 343.0348 corresponds to the bis-oxine manganese(II) complex  $[\text{M} + \text{H}]^+$ .



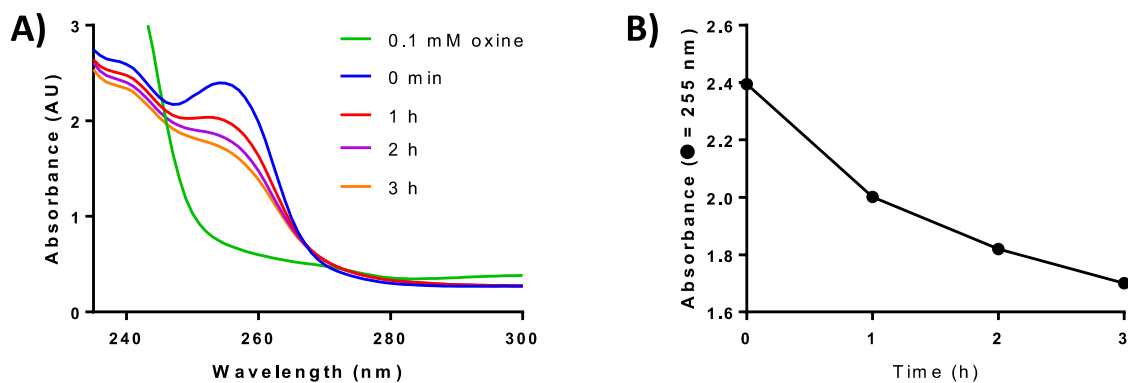
**Figure S2:** Infra-red spectrum of 8-hydroxyquinoline (black line) and  $\text{Mn(oxinate)}_2$  (red line). After reaction with  $\text{MnCl}_2$ , a reduction of the broad O-H stretch band at 2700-3400  $\text{cm}^{-1}$  occurs - relating to the formation of the Mn-O bond.



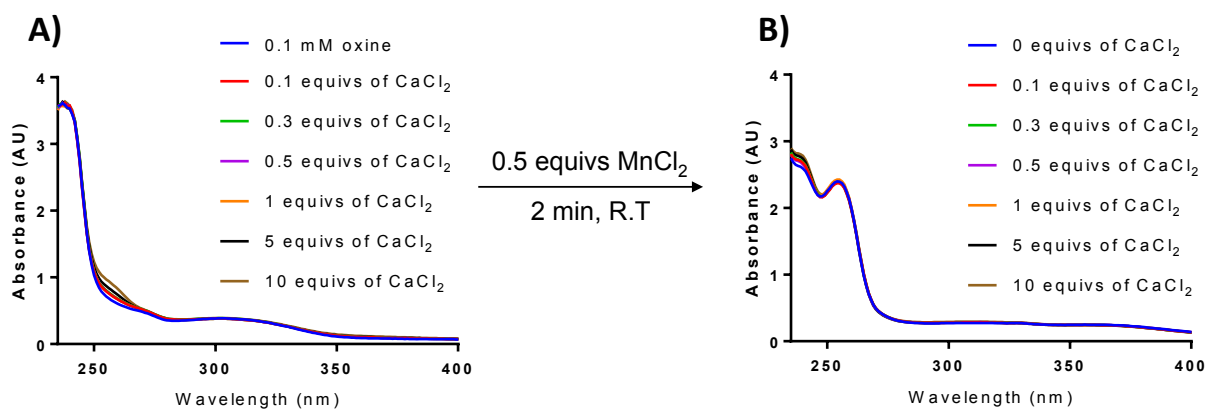
**Figure S3:** Representative UV-vis titration of  $\text{MnCl}_2$  into a 0.1 mM solution of oxine at pH 9.



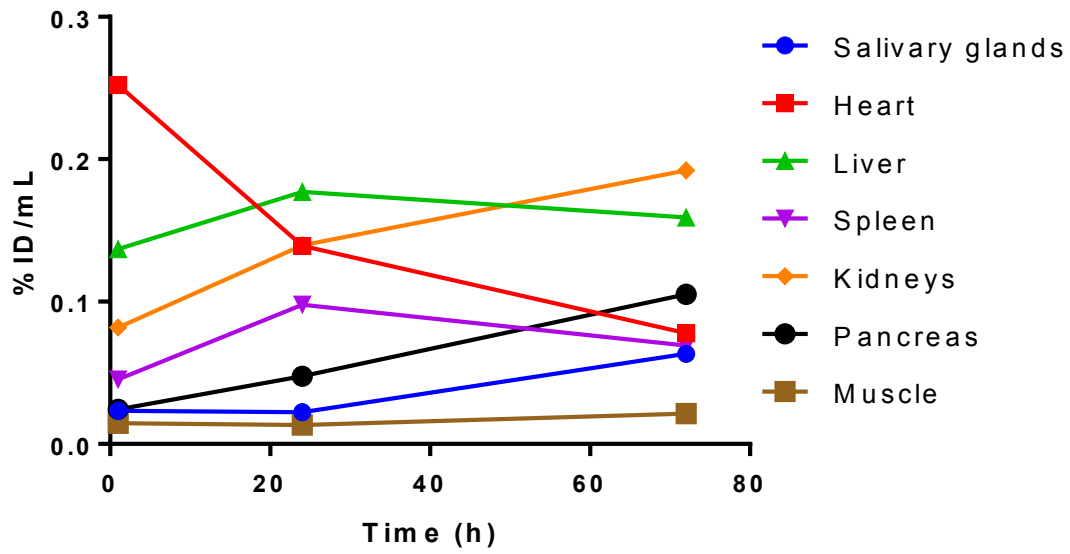
**Figure S4:** EPR spectrum of a 1 mM oxine solution (in 1 mM ammonium acetate buffer, pH 9) after addition of 0.5 equivalents of  $\text{MnCl}_2$  at 100 K. Formation of a  $\text{Mn}^{2+}$  species is clearly evident.



**Figure S5:** **A)** Overlaid UV-vis spectra of a 0.1 mM oxine solution (in 1 mM ammonium acetate buffer, pH 9, green line) and at different time points after addition of 0.5 equivalents of MnCl<sub>2</sub>; **B)** plot of absorbance at  $\lambda = 255$  nm versus hours after addition of MnCl<sub>2</sub>.



**Figure S6:** **A)** Overlaid UV-vis spectra of a 0.1 mM oxine solution in 1 mM ammonium acetate buffer (pH 9) in the absence and presence of various equivalents of CaCl<sub>2</sub>; **B)** Overlaid UV-vis spectra after addition of 0.5 equivalents of MnCl<sub>2</sub> to each of these solutions. The presence of calcium chloride appeared to have no inhibitory effect on the Mn(oxinate)<sub>2</sub> complex being formed *in situ*.



**Figure S7:** Time-activity curve based on the imaging study shown in Figure 6 (n = 1). A gradual clear increase in activity in the pancreas, salivary glands and kidneys is consistent with the release of  $^{52}\text{Mn}$  from the  $^{52}\text{Mn}$ Mn-DOXIL complex.