ABSTRACT

It is known that Ti(deferasirox)$_2$, a highly cytotoxic chemical transferrin mimetic Ti(IV)-based compound, displays one of the highest aqueous stabilities in the Ti(IV)- based anticancer field. Previous metal displacement kinetic studies show that, in approximating STf (serum transferrin) binding of Fe(III), deferasirox favors Fe(III) binding versus Ti(IV) and can rapidly bind Fe(III) via a transmetalation process and could eventually result in the delivery of Ti(IV) to intracellular target sites on a physiologically relevant time scale. This induced dissociation of Ti(IV) is only observed with a labile Fe(III) source, which implies that [Ti(deferasirox)$_2$]$^{2-}$ should survive intact transport into cells and become activated intracellularly. The research interest and focus has been to conduct metal-ligand competition studies to further understand the kinetic and binding affinity of deferasirox with not only Ti(IV) and Fe(III), but with other metal sources such as Cu(II) and Zn(II). With the use of external programs such as ReactLab, it will be posible to perform data fitting and deconvolution of experimental data to then be able to understand the affinity of deferasirox with the different metals.