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Title

Exploring the anticancer potential of titanium (IV) salicylate as an inhibitor of intracellular iron

Abstract

Salicylic acid is a beta-hydroxy acid that occurs as a natural compound in plants. It has direct activity as an anti-inflammatory agent and acts as a topical antibacterial agent due to its ability to promote exfoliation. The carboxyl group (COOH) can react with alcohols, forming several useful esters. Salicylic acid and some other salicylates have been reported in one study to form protonated iron(III) complexes. Iron is required in a higher concentration for cancer cells. Titanium (IV) has been shown to coordinate similarly to iron (III) to the serum transferrin (sTf), but because sTf has a higher affinity to iron (III) the use of chemical transferrin mimetic ligands (cTfm) is preferred. Knowing salicylic acid can form protonated iron (III) complexes it can be expected to form stable titanium (IV) complexes. The aims of this project are to synthesize titanium(IV) salicylate and explore its aqueous speciation using a suite of spectroscopic tools, to determine if titanium(IV) salicylate can transmetalate with iron (III), and to measure the cytotoxic potential of titanium(IV) salicylate.