Iron chelators as therapeutic agents for the treatment of cancer.

Richardson DR.

Source

The Iron Metabolism and Chelation Group, The Heart Research Institute, 145 Missenden Road, Camperdown, Sydney, Australia. d.richardson@hri.org.au

Abstract

A wide variety of studies in vitro, in vivo, and in clinical trials have demonstrated that the chelator currently used to treat iron overload disease, desferrioxamine, has anti-proliferative effects against both leukemia and neuroblastoma. However, the efficacy of desferrioxamine is severely limited due to its poor ability to permeate cell membranes and chelate intracellular iron pools. These studies have led to the development of other iron chelators that are far more effective than desferrioxamine. Some of these chelators such as 3-aminopyridine-2-carboxaldehyde thiosemicarbazone (Triapine) have entered phase I clinical trials, while other chelators such as 2-hydroxy-1-naphthylaldehyde isonicotinoyl hydrazone or tachpyridine require evaluation in animal models. The high anti-tumor activity observed with these ligands certainly suggests further development of chelators as anti-cancer agents is warranted.

PMID: 12050019