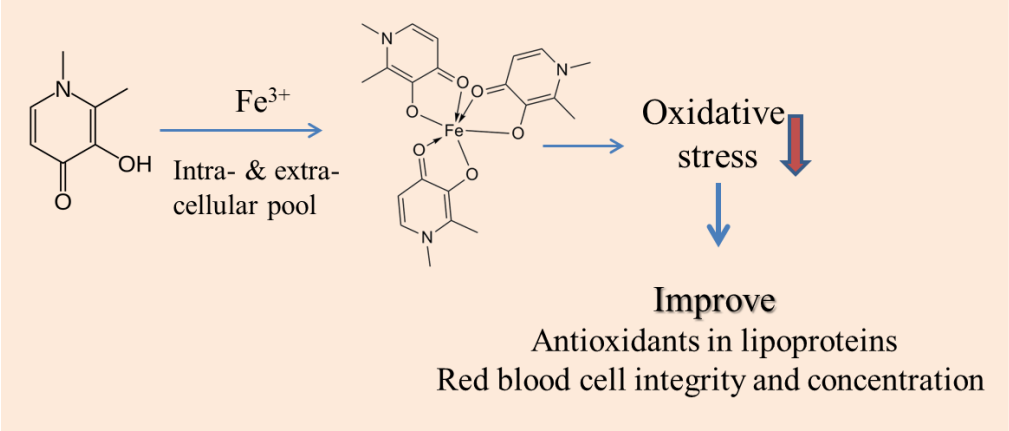
Iron chelation therapy: Deferiprone

Deferiprone (1,2-dimethyl-3-hydroxypyrid-4-one) is an orally active iron chelator and has been approved for use in thalassemia and hemochromatosis. It is a bidentate chelator that forms an iron complex comprising 3 molecules deferiprone to 1 iron atom, which is subsequently excreted through urine. As a small molecule (molecular weight 139 g/mol), deferiprone readily crosses the cell membrane and mobilizes excess iron from cells.

This study aimed to evaluate the antioxidant activity of deferiprone in β-thalassemia/hemoglobin E (β-thal/Hb E) patients after 12 months of chelation therapy. The results support the notion that deferiprone reduces redox-active iron or labile iron forms, which was sufficient to prevent oxidative sequelae within 3 months after treatment. Pro-oxidant activity of deferiprone was not observed during the study. Deferiprone improved the quality of HDL and reduced cardiovascular risk factors, as indicated by PON1 and PAF-AH activity. Ultimately, deferiprone improved the quality of red blood cells, resulting in increased hemoglobin content, and might reduce the need for transfusion therapy in the long term. Because of its efficacy and affordable cost, deferiprone may be a good choice for monochelation therapy rather than combination therapy with other chelators in the third world



Reference:

Morales NP, Rodrat S, Piromkraipak P, Yamanont P, Paiboonsukwong K, Fucharoen S. Iron chelation therapy with deferiprone improves oxidative status and red blood cell quality and reduces redox-active iron in β-thalassemia/hemoglobin E patients. Biomed Pharmacother. 2022 Jan;145:112381. doi: 10.1016/j.biopha.2021.112381.

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