Equivalent Effects on Fecal Reactive Oxygen Species Generation with Oral Supplementation of Three Iron Compounds: Ferrous Sulfate, Sodium Iron EDTA and Iron Polymaltose

Abstract:
Background: In any context of iron supplementation in the prenatal prophylaxis or therapeutic dosage range, a large amount will remain unabsorbed and pass through the intestinal tract into the colonic digesta possibly causing increased oxidation. 
Aim: To compare the generation of fecal reactive oxygen species (ROS) in situ after daily consumption of 100 mg of elemental iron in three frequently used forms of iron supplements. Methods: Ten healthy, iron-repleted adult males were investigated before and during supplementation with three oral iron compounds: 100 mg of oral iron were given as ferrous sulfate, Na Fe-EDTA and iron polymaltose for 6 days to each subject in an individually stratified sequence. Stool samples were collected and analyzed for iron content and the in situ generation of fecal ROS. Results: Significant increases in fecal ROS generation were observed during oral iron supplementation. No statistical differences were seen in either residual concentrations of non-heme iron in stool or the level of fecal ROS generation between the three Fe compounds. There was, however, a significant association between the iron concentration in the stool and ROS generation. Conclusion: In spite of the differences in their chemical characteristics, none of the three distinct iron complexes reduced oxidative stress in the intestinal lumen.