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Stand-off between an Iron Peptide Chelate and Folic Acid

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Abstract

Iron chelated with amino acids or peptides are shown to have better iron bioavailability in comparison to iron salts that are used for fortification. When an iron chelate is tested there is always an element of suspicion if the iron is delivered by the chelate and also about the undue effects on other related parameters. The present study was aimed at evaluating the influence of one such effective iron peptide chelate (ICP0312) on its ability to deliver iron in case of iron deficient anemia in conjunction with folic acid deprivation in rat model. The groups studied were are follows:control group fed with normal diet, anemia induced group fed with zero iron diet and deprived of folic acid(AFD) and AFD treated with the peptide chelate(AFDT). Rats with carboplatin induced anemic were treated with the iron chelated peptide and the controls with saline. The percentage hemoglobin (Hb) levels were approximately 13.0 g/dl for all groups at day 0 and 10.4 g/dl at day 8 in AFD and AFDT groups. Intraperitoneal injection of ICP0312 containing 26.5 µg of Fe every 3 days for 21 days resulted in no improvement of the Hb status indicating it had no role in anemia alleviation in the treated group. Interestingly after the peptide treatment period both anemic groups showed distinct reduction in serum folate concentrations. RBC count and hematocrit percentage in both anemic and anemic peptide treated groups were low when compared to the control group. Histopathological examinations showed no harmful effects of the peptide on the vital organs. The chelateis unable to surmount the dual challenge imposed on the rats as the reduction in RBC's drastically reduce the number of hemoglobin molecules that can utilize the chelated Fe.This is also supported by increased iron in liver upon peptide administrationshowing that iron delivery is not interrupted.