

EFFECT OF TEA ON IRON CHELATION EFFICACY OF DEFERASIROX IN THALASSEMIA PATIENTS

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Beta thalassemia is a group of inherited blood disorders caused by reduced or absent synthesis of the beta globin chain resulting chronic hemolytic anemia. Early diagnosis or and regular blood transfusion therapy is life saving for these patients. As early diagnosis and treatment of thalassemia improves the prognosis of pediatric and young adult thalassemia patients. The major cause of illness and mortality has shifted from the problem of hemoglobin deficient anemia to iron overload associated with chronic blood transfusion therapy.

Iron assessing model is very essential to calculate iron balance of healthy individuals. This model evaluates iron balance under deferasirox treatment and also to see the effect of tea on iron chelation efficacy of deferasirox.

All three healthy subjects in iron assessing model has average iron balance of 3.29 ± 0.742 mg/day. Healthy individuals have a positive iron balance. According to the Andrews 1999, daily intestine iron absorption was 1-2 mg/day. Thalassemia patients under deferasirox treatment were given average iron balance of -9.712 mg/day, 10.091 mg/day and -0.210 mg/day for a three day period for Subject S1-T, S2-T and S3-T respectively. Deferasirox act as an iron chelator to reduce iron overload in human body. Therefore negative iron balance was obtained with deferasirox for two subjects S1-T and S3-T. But Subject S2-T gives a positive iron balance with deferasirox. This might be due to non-responsiveness for the DFX of subject S2-T.

Tea is an aromatic beverage contains tannins. Tannin substances in tea help to chelate iron in the gut. Thereby tannins in tea effects or enhance iron chelation efficacy of deferasirox. Three thalassemia patients who were under deferasirox treatment who consumed tea for a three day period have average iron balance of 1.221mg/day, 0.689 mg/day and -3.943 mg/day for Subject S1-T, S2-T and S3-T respectively. Average iron balance per 1 mg of DFX for all subjects was $9.449 \mu\text{g}/\text{kg}/\text{day}$. Average iron balance per 1 average number of tea bag was $-25.746 \mu\text{g}/\text{kg}/\text{day}$. This data confirmed that tea enhance iron chelation efficacy of deferasirox. Thalassemia patients during blood transfusion days should avoid high iron containing food such Mysoor dhal ($54.612 \mu\text{g}$ in g) etc.

Thalassemia patients will prefer to consume tea with deferasirox to reduce their iron toxicity rather taking high drug doses. It is better for thalassemia patients to consume more tea with less amount of sugar to avoid diabetic condition. Reduction in Iron toxicity will help them to avoid splenectomy and other effects of iron toxicity which will beneficial for their well-being of life.