The Effects of α-Tocopherol in Hemolysis and Oxidative Stress Marker on Red Cell Membrane β-Thalassemia Major

**Background:** The accumulation of unpaired α-globin chains in β-thalassemia major patients may clinically create ineffective erythropoiesis, hemolysis, and chronic anemia. Multiple blood transfusions and iron overload cause cellular oxidative damage. However, α-tocopherol, an antioxidant, has been known as a potent scavenger of lipid radicals in the red cell membrane of β-thalassemia major patients.

**Purpose:** To evaluate the effects of α-tocopherol in hemolysis and oxidative stress on the red cell membrane of β-thalassemia major.

**Methods:** In this randomized controlled trial, we allocated subjects in the placebo and α-tocopherol groups. Doses of α-tocopherol were based on the recommendation of Institute of Medicine: 4–8 years old 200 mg/day; 9–13 years old 400 mg/day; 14–18 years old 600 mg/day. Hemolysis, oxidative stress, and antioxidant variables were evaluated before and after 4 weeks of consuming either α-tocopherol or placebo, performed prior to blood transfusions.
Figure. Study Protocol

β-Thalassemia Major → Randomization

α-tocopherol group

Transfusion of PRC → Supplementation of α-tocopherol for four weeks → Transfusion of PRC

Placebo group

Transfusion of PRC → Placebo for four weeks → Transfusion of PRC

Blood sample:
 Hp, Hx, fragilitas SDM
 MDA, GSH, GSSG
 α-tocopherol
 Hb,
 Serum ferritin
 Transferin saturation
 ALT, Total Cholesterol
 HBsAg, Anti HCV