

## عنوان مقاله:

Relationship between Oxidative Stress and the Blood Iron Concentration and Antioxidant Status in Major  $\beta$ -thalassemia in Iraq

## محل انتشار:

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## خلاصه مقاله:

Reduction or total lack of beta-globin chains caused by a congenital disease called  $\beta$ -thalassemia major is one of the lives threatening diseases. Patients who suffer from  $\beta$ -thalassemia need a repeated blood transfusion for survival. The repeated blood transfusion in  $\beta$ -thalassemia patients may cause oxidative stress and tissue injury due to iron overload, altered antioxidant enzymes, and other essential trace element levels. The current study aimed to investigate the correlation of oxidative stress with serum trace element levels and antioxidant enzyme status in  $\beta$ -thalassemia major patients. A total of 130 serum samples were obtained from  $\beta$ -thalassemia major patients ( $n=100$ ; 50 males and 50 females) and healthy individuals ( $n=30$ ; 15 males and 15 females). Hematological parameters were measured on both groups by a comprehensive blood test that included the amount of hemoglobin Hb, packed cells volume, number of red blood cells, mean corpuscular volume ratio, mean corpuscular hemoglobin ratio, mean corpuscular hemoglobin concentration, red cell distribution width, white blood cells, and platelets counts. All of these blood parameters showed a clear decrease in thalassemia patients, except for red blood cells and platelets counts, which demonstrated a significant increase. The highest significant mean for iron in males and females were  $233.768$  and  $219.150$   $\mu\text{g}/\text{dL}$  in patients, respectively, while the mean level of iron significantly reduced in the control group ( $113.40$  and  $103.33$   $\mu\text{g}/\text{dL}$  in males and females, respectively). The results indicated a significant decrease in uric acid in males and females in the patient group ( $41.042$  and  $40.582$   $\text{mg}/\text{L}$  in males and females, respectively), compared to the control group ( $53.866$  and  $43.60$   $\text{mg}/\text{L}$  in males and females, respectively). Allantoin concentration was detected by high-performance liquid chromatography technique, the results of which showed that the highest values in patients were  $62.822$  and  $25.480$   $\text{mg}/\text{L}$  in males and females, respectively, compared to the control group  $2.342$  and  $1.481$   $\text{mg}/\text{L}$  in males and females, respectively. Superoxide dismutase concentration decreased in patients ( $129.635$  and  $111.848$   $\text{U}/\text{mL}$  in males and females, respectively), compared to the control group ( $208.623$  and  $190.413$   $\text{U}/\text{ml}$  in males and females, respectively).

## کلمات کلیدی:

Antioxidant, Beta-Thalassemia, Superoxide dismutase, Trace elements, Uric acid, Allantoin

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