

## The Relation between Oxidative Stress and Serum Ferritin in Patients with $\beta$ -thalassemia Major Treated by Iron Chelating Agents

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### ABSTRACT

**Background:** The increased iron level aids the formation of many of oxygen-reactive compounds via Haber-Weiss and Fenton reactions. These compounds participate in the metal regulation of the redox reaction and can affect many organs, erythrocytes and endocrine glands causing disturbances in the function of these organs. Iron chelating therapy is required to detoxify iron's toxic effects to avoid oxidative injury.

**Objective:** This research aims to determine the relationship between oxidative status and serum ferritin in major  $\beta$ -thalassemic patients treated by iron chelating agents ( deferasirox and deferoxamine).

**Methods:** It is a cross-sectional study, 55 known cases of  $\beta$ -thalassemic patients receiving chelating agents therapy under follow-up participated in the study, their ages ranged between 3-20 years, divided into two groups, group one consisted of 30 patients, 14 male and 16 female, received oral agent deferasirox, Group two consisted of 25 patients, 11 male and 14 female, on Deferoxamine therapy. Total antioxidant capacity (TAOC), serum Malondialdehyde (MDA), haemoglobin and serum ferritin were measured in the studied groups.

**Results:** the TAOC in the patients group on Deferoxamine, is significantly higher than in the Deferasirox group ( $34.5 \pm 13.2$ ;  $29.8 \pm 11.8$  u/ml) respectively, while MDA is higher in Deferasirox than in patients in the deferoxamine group ( $8.6 \pm 5.4$ ;  $5.8 \pm 4.4$  nmol/ml) respectively. A non-significant variation in serum ferritin levels and haemoglobin between the 2 groups was found. A considerable affirmative correlation, between TAOC and serum ferritin, and a non-considerable affirmative correlation between MDA and serum ferritin.

**Conclusion:** A considerable affirmative correlation, between TAOC and serum ferritin, and anon – considerable affirmative correlation between MDA and serum ferritin when comparing the results of all patients as one group, were found.

**Keywords:** Thalassemia, Oxidative Stress, Serum ferritin, Deferasirox, Deferoxamine

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