

**HUBUNGAN KADAR FERITIN DAN ZINK SERUM PADA PENDERITA  
THALASEMIA MAYOR**

**TESIS**

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## ABSTRAK

### Hubungan Kadar Feritin dan Zink Serum Pada Penderita Thalasemia

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**Latar belakang:** Pada penderita thalasemia terjadi peningkatan kadar feritin yang disebabkan oleh tranfusi darah yang berulang hal ini diperberat dengan peningkatan absorpsi besi akibat eritropoiesis yang tidak efektif. Besi bersifat kompetitor terhadap zink. Peningkatan besi akan menurunkan absorpsi zink dalam saluran cerna dan terjadi inhibisi kompetitif antara besi dan zink pada pengikatan transferin sebagai alat angkut kedua jenis mineral tersebut dalam darah. Hingga saat ini masih sedikit penelitian yang meneliti tentang kadar zink pada anak thalasemia dan hubungannya dengan kadar feritin.

**Metode:** Penelitian *case control* pada 68 subyek penelitian dari Oktober 2016 sampai Agustus 2017. Penelitian bertujuan membandingkan kadar zink serum pada penderita thalasemia dengan kontrol sehat dan menghubungkan kadar feritin dan zink serum pada anak thalasemia. *Wilcoxon test* digunakan untuk melihat perbedaan antara kadar zink serum penderita thalasemia dengan kontrol. Korelasi feritin dan kadar zink serum penderita thalasemia dianalisis dengan menggunakan uji korelasi *Spearman*.

**Hasil:** Terdapat 34 penderita thalasemia dan 34 kelompok kontrol sehat. Kelompok usia terbanyak usia  $\leq 10$  tahun yaitu 58,8%. Perawakan pendek terjadi pada 20 orang (58,8%) di kelompok thalasemia dan 6 orang (17,6%) di kelompok kontrol. Median kadar zink serum penderita thalasemia dan kelompok kontrol berturut-turut adalah 119,34  $\mu\text{g/dl}$  (IQR=71,27) dan 120,08  $\mu\text{g/dl}$  (IQR=26,28), tidak terdapat perbedaan yang bermakna pada kadar zink penderita thalasemia dengan kelompok kontrol ( $p=0,36$ ). Terdapat korelasi negatif lemah namun tidak signifikan antara kadar feritin dan zink serum pada penderita thalasemia anak ( $r = -0,023$  dan  $p=0,895$ ).

**Kesimpulan:** Tidak terdapat perbedaan bermakna antara kadar zink serum penderita thalasemia dengan kontrol sehat. Terdapat korelasi negatif lemah yang tidak signifikan antara kadar feritin dan zink serum pada penderita thalassemia mayor.

**Kata kunci :** Thalasemia, feritin, zink, anak-anak.



## **Relationship between serum ferritin and zinc levels in patients with major thalassemia**

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### **Abstract**

**Background:** In patients with thalassemia an increase in iron levels caused by repeated blood transfusions is compounded by an increase in iron absorption due to ineffective erythropoiesis. Iron is a competitor to zinc. Increased iron will reduce zinc absorption in the gastrointestinal tract and there is a competitive inhibition between iron and zinc in binding to transferrin as a means of transporting both types of minerals in the blood. Until now there are still few studies that examine zinc levels in thalassemia children and their relationship with ferritin levels.

**Methods:** A case-control study in 68 research subjects from October 2016 to August 2017. The study aimed to compare serum zinc levels in patients with thalassemia with healthy controls and to correlate serum ferritin and zinc levels in thalassemia children. Wilcoxon test was used to see the difference between serum zinc levels of thalassemia patients and controls. Ferritin correlation and serum zinc level of thalassemia patients were analyzed using the Spearman correlation test.

**Results:** There were 34 patients with thalassemia and 34 healthy control groups. The highest age group is  $\leq 10$  years old, which is 58.8%. Short stature occurred in 20 people (58.8%) in the thalassemia group and 6 people (17.6%) in the control group. The median serum zinc level of thalassemia patients and the control group was 119.34  $\mu\text{g} / \text{dl}$  (IQR = 71.27) and 120.08  $\mu\text{g} / \text{dl}$  (IQR = 26.28), there were no significant differences in the zinc level of the patients thalassemia with the control group ( $p = 0.36$ ). There is a weak negative correlation but not significant between serum ferritin and zinc levels in pediatric thalassemia patients ( $r = -0.023$  and  $p = 0.895$ ).

**Conclusion:** There was no significant difference between serum zinc levels of thalassemia sufferers with healthy controls. There is a weak negative correlation that is not significant between ferritin and serum zinc levels in thalassemia major patients.

**Keywords:** Thalassemia, ferritin, zinc, children.