

Effects of Zinc Sulfate on children with chronic kidney disease

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Zinc is one of the essential trace elements in human growth and development. Both zinc deficiency and Chronic Kidney Disease (CKD) are risk factors for morbidity and mortality, recognized as public health problems worldwide. There are few studies on zinc deficiency and its supplementation in children with CKD. Therefore, the goal of this study was to evaluate the effect of two doses of Zinc Sulfate (ZS) on the nutritional status of children with CKD.

Methodology and theoretical orientation: In the city of Lima, a single-blind, randomized multicentre study was conducted on 48 patients with CKD (48% women) under 18 years for one year. Randomly, participants took 30 or 15 mg/day of ZS, respectively. We performed anthropometric measurements and biochemical analyses.

Serum Zinc Concentration (SZC) was assessed via atomic absorption spectrophotometry. Increase or decrease in patients' Body Mass Index (BMI), Z-score, serum albumin, zinc, and C- Reactive Protein (CRP) levels were used to assess the effect of supplementation.

Findings: The mean of the SZC and albumin was normal before and after the SZ. Men had a higher mean SZC than women. A positive and significant association was observed between SZC and serum albumin before ($p = 0.000$) and after ($p = 0.007$) supplementation. In both groups, at the end of the trial, there was a small but positive and significant change in body mass and normalization of BMI Z-score, albuminemia, serum zinc levels and CRP, especially with doses of 30 mg/day of ZS.

Conclusion and significance: Zinc supplementation may improve the nutritional status of children and adolescents with CKD.



Figure 1. Change by groups of zinc supplementation.

Recent Publications

1. Escobedo Monge MF, Barrado E, Alonso Vicente C, Redondo del Río MP, Manuel Marugán de Miguelsanz J. Zinc Nutritional Status in Patients with Cystic Fibrosis. *Nutrients*. 2019; 11(1):150.
2. Escobedo-Monge, M.F.; Torres-Hinojal, M.C.; Barrado, E.; Escobedo-Monge, M.A.; Marugán-Miguelsanz, J.M. Zinc Nutritional Status in a Series of Children with Chronic Diseases: A Cross-Sectional Study. *Nutrients*. 2021, 13, 1121.
3. Monge, M.F.E.; Barrado, E.; Vicente, C.A.; del Río, M.P.R.; de Miguelsanz, J.M.M. Zinc Nutritional Status in Patients with Cystic Fibrosis. *Nutrients*. 2019, 11, 150.
4. Escobedo, M.F.; Barrado, E.; Alonso, C.; Marugán de Miguelsanz, J.M. Comparison study between colorimetric method and flame atomic absorption spectrophotometry in serum zinc status. *Nutr. Clin. Diet. Hosp.* 2018, 38, 128–133.
5. Escobedo, M.A.F. Effects of the Zinc Sulphate in a Girl with Chronic Renal Failure. *Acad. J. Ped. Neonatol.* 2016, 2, 1–3.

Biography

Marlene is a pediatrician, Doctor of Medicine, and researcher at the Faculty of Medicine of the Valladolid University. She has a doctorate in "Health Sciences Research", two master's degrees, one in "Clinical Nutrition" and the other in "Biological Aspects of Nutrition." She is a peer reviewer for the MDPI editorial, International Journal of Environmental Research and Public Health and Medicine. She is very interested in food security and food bio fortification and especially in the research that is being carried out on micronutrients in the nutritional status of patients with malnutrition and chronic diseases, especially in childhood and adolescence. She believes in the value of preventive medicine in reducing chronic diseases throughout the life of the human being.