

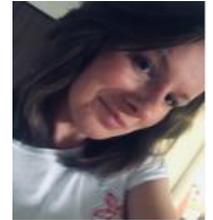
Differences in mineral levels may be related to symptoms of chronic fatigue syndrome

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Abstract

The aim of our work was to examine the level of minerals among patients with chronic fatigue syndrome (CFS). Our study included 9 patients (3 men and 6 women) diagnosed using the Fukuda criteria. The mean age of the patients was 33.33 ± 6.48 years and the mean disease duration was 3.94 ± 3.11 years. Hair samples 3-4 cm long, counting from the scalp skin, were taken from which external impurities were then removed based on recommendations of the International Atomic Energy Agency and pressure mineralization using microwave energy. Samples were then analyzed for minerals using Atomic Absorption Spectrometer (AAS). We evaluated the levels of calcium, magnesium, zinc, copper, iron, sodium and potassium in the study and control group. The bioelectrical impedance method (BIA) was used to analyze body composition. We observed statistically significant differences in the levels of some minerals Ca ($P=0.0151$), Mg ($P=0.0050$), Zn ($P=0.0002$), K ($P=0.0372$), Na ($P=0.0321$) compared to the control group composed from healthy volunteers. Moreover, a positive correlation was observed only between Fe level and length of history ($R=-0.71$, $p<0.05$). Differences in mineral levels may be related to many different symptoms in the course of chronic fatigue syndrome. Appropriate regulation of mineral levels may lead to the relief of symptoms, but further research is needed.



Speaker Publications:

1. Castro-Marrero J, et al., (2015) Does oral coenzyme Q10 Plus NADH supplementation improve fatigue and biochemical parameters in chronic fatigue syndrome? *Antioxidants and Redox Signaling*, vol. 22(8):679-685.
2. Sathyapalan T, et al., (2010) High cocoa polyphenol rich chocolate may reduce the burden of the symptoms in chronic fatigue syndrome. *Nutrition Journal* 9:55.
3. Joustra M L, Minovic I, Janssens K A M, Bakker S J L and Rosmalen J G M (2017) Vitamin and mineral status in chronic fatigue syndrome and fibromyalgia syndrome: A systematic review and meta-analysis. *PLoS ONE* 12(4):e0176631.
4. Pietrobelli A, Rubiano F, St-Onge M P and Heymsfield S B (2004) New bioimpedance analysis system: improved phenotyping with whole-body analysis. *Eur J Clin Nutr* 58(11):1479-1484.
5. Wang J, Um P, Dickerman B A, Liu J (2018) Zinc, magnesium, selenium and depression: a review of the evidence, potential mechanisms and implications. *Nutrients*, 10:5.

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Biography:

Joanna Słomko has completed his PhD at Nicolaus Copernicus University in Bydgoszcz. She is an adjunct, university teacher; she is conducting and coordinating research projects in the areas: clinical and applied physiology, exercise physiology and neurophysiology. She is the Vice-Chairman of Polish Society of CFS/ME Research. She has published more than 70 papers in reputed journals and has been serving as an Editorial Board Member of repute.